JOURNAL OF THE

AMERICAN INSTITUTE OF ARCHITECTS

Vol. VI JUNE, 1918 Number 6

CONTENTS

		Page
Frontispiece—The Gossips of St. Severin. After the etching by Henry Winslow		278
What Is the Price of a Life?		279
The House by the Sea	*S. H. W.*	280
The Circean Shadow! IV	*Richard Wallace Tudor*	284
Old Views of Paris. (Illustrations)		287–290
The Plan of Paris	*Nils Hammarstrand*	291
Plans for the Reconstruction of France. (Illustrations)		299, 300
Some of the New War Buildings at Washington. (Illustrations)		301, 302
Government Mobilization of the Building Industries		303
"Haasenstein & Vogler"		304
The Self-Owning Community Idea		305
Professional Ferment	*William Phillips Comstock*	306
Signs of Change	*Sullivan W. Jones*	307
News Notes		310
Obituary		311
Letters from an American Architectural Student in France		312
Structural Service Department		313

Published Monthly by

THE AMERICAN INSTITUTE OF ARCHITECTS

1159 Mulberry Street, Harrisburg, Pa. The Octagon, Washington, D. C.

Committee on Publications

Frank C. Baldwin, *Chairman*
Ben J. Lubschez
H. Van Buren Magonigle

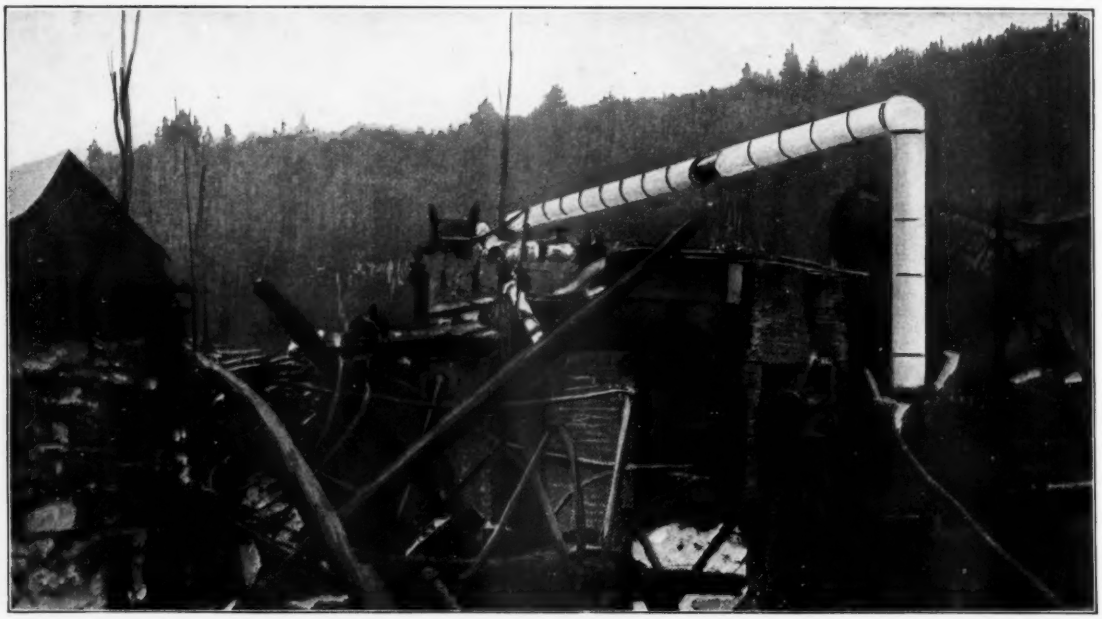
Charles Harris Whitaker, Editor
The Octagon

C. Grant La Farge
Charles L. Borie, Jr.
Thomas R. Kimball

50 CENTS A COPY. $5 PER YEAR

Checks or P. O. orders should be made payable to The Journal of the American Institute of Architects, and mailed to The Octagon, Washington, D. C.

Copyright, 1918, by the American Institute of Architects. Entered as second-class matter, December 20, 1912, at the Post Office at Harrisburg, Pa., under Act of Congress of August 24, 1912



Fire Didn't Affect "85% Magnesia"

This is an actual picture of the remains of a factory fire in a New England textile-mill.

The building was entirely demolished. The boiler-house went with the rest. Even big steel beams were twisted and collapsed in the intense heat. It was, as the fire underwriters say, a "total loss."

The only thing worth salving was the Pipe-Covering.

Because this was "85% Magnesia," it had withstood both the flames and the streams of water that had been poured over it by the firemen. While, of course, the canvas covering was burned completely away, the "85% Magnesia" itself remained unharmed.

"Heat-insulation" that won't stand high steam-temperature is a fraud. That is why materials of an "organic" (animal or vegetable) nature are of little value as pipe- and boiler-coverings. "85% Magnesia" is an inert mineral mixture that is absolutely unaffected by the temperature of the highest pressure or superheat steam that can be used in ordinary practice.

While "85% Magnesia" was thus inconsumable and unharmed in this conflagration, it is not sold as a fire-resistant. Some other materials are better fitted for such work.

But as a *heat*-saver, it is without a rival, not only because of its *initial* powers of heat-resistance, but because those powers continue unimpaired for as many years as the pipe or boiler will last, and in many instances even longer.

The full story is told in "Let '85% Magnesia' Defend Your Steam," sent free on request. The Specification for the scientific application of "85% Magnesia," compiled and indorsed by the Mellon Institute of Industrial Research, is sent upon request by the Magnesia Association of America.

MAGNESIA ASSOCIATION *of* AMERICA

721 Bulletin Bldg. Philadelphia Penna.

EXECUTIVE COMMITTEE, Wm. A. Macan, *Chairman*

George D. Crabbs, The Philip Carey Co. . Cincinnati, Ohio
Alvin M. Ehret, Ehret Magnesia Mfg. Co., Valley Forge, Penna.
J. R. Swift, The Franklin Mfg. Co. . Franklin, Penna.
R.V. Mattison, Jr., Keasbey & Mattison Co., Ambler, Penna.

THE AMERICAN INSTITUTE OF ARCHITECTS

THE OCTAGON, WASHINGTON, D. C.

OFFICERS FOR 1918

President	THOMAS R. KIMBALL, Omaha, Neb.
First Vice-President	CHARLES A. FAVROT, New Orleans, La.
Second Vice-President	GEORGE S. MILLS, Toledo, Ohio.
Secretary	W. STANLEY PARKER, Boston, Mass.
Treasurer	D. EVERETT WAID, 1 Madison Ave., New York City

BOARD OF DIRECTORS

For One Year

EDWIN H. BROWN, 716 Fourth Ave., Minneapolis, Minn.
BEN J. LUBSCHEZ, Reliance Building, Kansas City, Mo.
HORACE WELLS SELLERS, 1301 Stephen Girard Bldg., Philadelphia, Pa.

For Two Years

W. B. FAVILLE, Balboa Building, San Francisco, Cal.
BURT L. FENNER, 101 Park Ave., New York City
ELLIS F. LAWRENCE, Chamber of Commerce Bldg., Portland, Ore.

For Three Years

EDWARD W. DONN, 808 Seventeenth St., Washington, D. C.
ROBERT D. KOHN, 56 West 45th St., New York City
RICHARD E. SCHMIDT, 104 S. Michigan Ave., Chicago, Ill.

LIST OF CHAPTERS, 1918

ALABAMA.—*W. T. Warren, Empire Building; †J. A. Miller, Title Guarantee Building, Birmingham.

BALTIMORE.—*Josias Pennington, 330 North Charles Street; †Clyde N. Friz, 1523 Munsey Building, Baltimore.

BOSTON.—*Henry H. Kendall, 93 Federal St.; †Charles Collens, 40 Central St., Boston.

BROOKLYN.—*Carroll H. Pratt, Plan and Engineering Dept., Merchants' Shipbuilding Corp., Bristol, Pa.; †Alexander Mackintosh, 55 Bible House, Astor Place, New York City.

BUFFALO.—*Franklyn J. Kidd, 110 Franklin St.; †Robert North, 808 Niagara Life Building, Buffalo.

CENTRAL NEW YORK.—*O. H. Waltz, Trust Company Building, Ithaca; †E. S. Gordon, 300 Sibley Block, Rochester.

CINCINNATI.—*Louis Dittoe, Carew Building; †J. F. Sheblessy, 519 Main St., Cincinnati.

CLEVELAND.—*C. S. Schneider, 2248 Euclid Ave.; †H. W. Weeks, 1900 Euclid Ave., Cleveland.

COLORADO.—*W. N. Bowman, 915 Central Savings Bank Building; †M. B. Biscoe, 901 Mining Exchange Building, Denver.

COLUMBUS.—*C. St. John Chubb, Jr., 237 Seventeenth Avenue; †C. E. Richards, Hartman Building, Columbus.

CONNECTICUT.—*W. R. Briggs, 1115 Main St., Bridgeport; †A. Raymond Ellis, 36 Pearl St., Hartford.

DAYTON.—*Albert Pretzinger, Reibold Building; †Clifford C. Brown, Reibold Building, Dayton.

GEORGIA.—*Wiliam J. Sayward, Candler Building; †W. J. J. Chase, Candler Building, Atlanta.

ILLINOIS.—*D. H. Burnham, 209 South LaSalle St.; †Henry K. Holsman, 1544 East Fifty-seventh Street, Chicago.

IOWA.—*Allen H. Kimball, Iowa State College, Ames; †Eugene H. Taylor, 222 South Third St., Cedar Rapds.

KANSAS CITY.—*Carl Boller, Gayety Theater Building; †Selby H. Kurfiss, Scarritt Building, Kansas City.

LOUISIANA.—*Moise H. Goldstein, Title Guarantee Building; †Charles L. Armstrong, Q. M. Dept., Camp McArthur, Waco, Texas.

LOUISVILLE.—*Herman Wischmeyer, Starks Building; †Val P. Collins, Paul Jones Building, Louisville, Ky.

MICHIGAN.—*Charles Kotting, 2306 Dime Savings Bank Building; †Adolph Eisen, 926 Hammond Building, Detroit.

MINNESOTA.—*W. W. Tyrie, 320 Auditorium Building; †Cecil Chapman, 84 South Tenth St., Minneapolis.

NEW JERSEY.—*Gilbert C. Higby, 207 Market St., Newark; †Hugh Roberts, 1 Exchange Place, Jersey City.

NEW YORK.—*Egerton Swartwout, 18 W. 34th St.; †Stowe Phelps, 215 West Fifty-seventh Street, New York City.

NORTH CAROLINA.—*W. H. Lord, Asheville, †Earl G. Stillwell, Hendersonville.

OREGON.—*Joseph Jacobberger, Board of Trade Building; †Alfred H. Smith, 802 Board of Trade Building, Portland.

PHILADELPHIA.—*John P. B. Sinkler, 112 South Sixteenth St.; †Edward A. Crane, 1012 Walnut St., Philadelphia.

PITTSBURGH.—*Richard Hooker, Farmers' Bank Building; †Frederick T. Bigger, 522 City-County Building, Pittsburgh.

RHODE ISLAND.—*W. T. Robertson, 1216 Turk's Head Building; †Norman M. Isham, 1013 Grosvenor Building, Providence.

SAN FRANCISCO.—*John Bakewell, Jr., 251 Kearny St.: †M. M. Bruce, 1281 Flood Building, San Francisco.

SOUTH CAROLINA.—*E. D. Sompayrac, Palmetto Building, Columbia; †N. G. Walker, Rock Hill.

SOUTHERN CALIFORNIA.—*John J. Backus, City Hall; †H. F. Withey, 1017 Van Nuys Building, Los Angeles.

SOUTHERN PENNSYLVANIA.—*Miller I. Kast, 222 Market Street, Harrisburg; †Edward Leber, 42 West Market St., York.

ST. LOUIS.—*M. P. McArdle, Chemical Building; †Wilbur T. Trueblood, Carleton Building, St. Louis.

TEXAS.—*J. H. Hubbell, 619 North Texas Building, Dallas; †F. C. Teich, 915 Union National Bank Building, Houston.

TOLEDO.—*T. F. Huber, Spitzer Building; †L. S. Bellman, Ohio Building, Toledo.

VIRGINIA.—*Wm. C. Noland, Beaver Dam; †Benj. F. Mitchell, Seaboard Bank Building, Norfolk.

WASHINGTON (D. C.).—*Waddy B. Wood, 816 Connecticut Ave.; †R. L. Macneil, Bond Building.

WASHINGTON STATE.—*Daniel Huntington, 513 Colman Building; †G. C. Field, 727 Henry Building, Seattle.

WISCONSIN.—*T. L. Rose, 1312 Majestic Building; †Henry J. Rotier, 813 Goldsmith Building, Milwaukee.

WORCESTER.—(Merged with the Boston Chapter, November 1, 1917.

*Presidents. †Secretaries.

THE GOSSIPS OF ST. SEVERIN.—After the etching by Henry Winslow

JOURNAL OF THE
AMERICAN INSTITUTE OF ARCHITECTS

Vol. VI JUNE, 1918 No. 6

What Is the Price of a Life?

HOW SHOULD AN ARCHITECT BE PAID when employed by the Government in war construction work?

There is no answer!

There would be an answer if we could convert ourselves into a complete and perfect Democracy, if only for the period of the war.

WHAT IS THE PRICE OF A LIFE? How can there be any other standard of payment for any human service in war than the PRICE OF A LIFE?

What right has the ABLEST MAN in the United States to be paid any more than General Pershing? What right has the riveter to be paid more than the private in the ranks?

WHAT IS THE PRICE OF A LIFE? How can there be any other standard of payment for any human service in war than the PRICE OF A LIFE?

How can a nation founded on the ideal of equal opportunity continue the ancient system of accepting the sacrifice of earnings by millions of men who accept a small wage and risk their life, while others remain behind and gather in profits which in some cases amount to scandalous fortunes? How can you establish any just basis of paying any man or woman for any service in wartime, no matter how or where rendered, except upon the basic premise that he or she shall receive no more for that service than the equivalent scale of wage in the army or the navy?

WHAT IS THE PRICE OF A LIFE? How can there be any other standard of payment for any human service in war than the price of a life?

And the question is not, what was the price of life yesterday nor what will be its price tomorrow? What is its price today, now? What other price has any life than its actual price at this moment? What price do you place on the life of a soldier when he goes over the top? What do you think of him for doing it? How can you take more for your services than you give him for his life? How can any man look upon war profits except with a feeling of disgust? What else can he do with them except give them away? How can he keep them and meet the wondering gaze of the fatherless, the husbandless, the brotherless, or the sonless?

WHAT IS THE PRICE OF A LIFE? How can there be any other standard of payment for any human service in war than the price of a life?

Life has different values in times of peace, we may say, according to what it may contribute to human betterment. But the only difference in life value in time of war is that which is measured by the difference in pay received by the General and the private, or by the Admiral and the jackie. They risk their lives, and the only wage they get is what they are paid for taking the risk. And these men do not think of the price when they go "over the top" or when they face the mine and the submarine. In risking their life, setting no price on it, they have been made free. It is the only way to be made free. To them comes the thrill of a complete abandonment to the service of the nation, pure and undefiled.

We who stay at home cannot risk our lives. Most of us would like to. But we have to content ourselves in giving up the privilege by making our utmost contribution in service of another kind. A perfectly safe kind, for most of us. We are ashamed to take a profit for that service, most of us, and shame on those who are not ashamed.

BUT SUPPOSE THIS: That all those who stay at home, men and women, were organized into a civilian army, with privates, corporals, lieutenants, majors, colonels and generals, with the same scale of pay that prevails in the army and the navy. That we were all fed and clothed and housed as they are in the army and the navy. That we were promoted for merit as they are in the ranks and on board the ships. That we, too, were made free to serve without hope of profit, and only given the joy of knowing that it was made possible for us not to take a profit for our labor while our fellows were risking their lives for ours.

Then we could establish an equality of national service. Then we could suspend all equality of opportunity for profit and be able to look our fighters in the face, conscious that we had made the utmost contribution that was possible for us to make. We had given our all and received no more than we pay for theirs.

WHAT IS THE PRICE OF A LIFE? How can there be any other standard of payment for any human service in war than the price of a life?

In such a civilian army there would be little need for money. All service and all effort would be commensurably rewarded. We could even carry the principle of democracy to the end and do without money at all. The war would be paid for with labor. We would emerge from it without any indebtedness and in a perfect state of organization. Problems of reconstruction would have no terrors. Relieved of the terrific load of debt and interest, we could restore our equality of opportunity, as far as we cared to, after the war.

But we would have made such strides toward Democracy that the whole world would have seen the value of the lesson. We would look upon life differently and be unwilling to permit that disgraceful form of profit which is the curse of modern nationalisms, and the chief monetary wastage of war.

WHAT IS THE PRICE OF A LIFE? How can there be any other standard of payment for any human service in war than the price of a life?

Until we meet that question fully and fairly there is no answer to the question as to what any man should be paid for his services to the nation in time of war. All attempts to fix a fee or determine a rate are only subterfuges. They beg the question. They dodge the issue. They make patriotism a word of little meaning and they raise questions in the minds of men which we must some day answer. Why not now?

WHAT IS THE PRICE OF A LIFE?

THAT IS THE QUESTION.

If we cannot answer that, then the question of what an architect should be paid, or what any other man should be paid for wartime service, is nothing more than dust in our eyes.

The House by the Sea

III. SPRING

THE inevitable has happened, as usual. Day by day, all through the stormy, snowy, rainy April, spring has been coming, and in spite of the east wind blowing cold off the Atlantic, she is here. The fairy ring shows green on the brown marsh; birds, buds, grass, soft-coming colors, all proclaim it, but

> "I, singularly moved
> To love the lovely that are not beloved,
> Of all the season's most
> Love winter"

and to reward my rare devotion, winter, day before yesterday, sent me one more snowstorm in farewell. It was most spectacular—the snow began fine and thick, then big and heavy. For hours it whirled down, obliterating all paths, grass, crocus blooms, the "lifted spears" of the tulips, every sign of spring; it covered the trees with white to their topmost twigs. The fog horn blew and the thick night shut us in. But early in the morning I had the joy of looking out when the spring sun was rising and the disgusted robins were protesting vigorously their damp nests. Again that snow-purified air, so still and clear, and on the marsh once more those lovely colors, white, blue, violet, amethyst, with yellow of the last year's reeds; once more the beauty of the bare trees against the blue and white of sky, sea and snow. Look your fill; it will not last! By noon the conquering sun

had not left so much as would make a snowball, the birds were happy again, and the green grass showed greener than before.

Ever since I came, except when covered by beneficent snow, the desolate vegetable garden has given me the blues. Stalks of last year's brussels sprouts, cauliflowers and corn standing in the wet are far more depressing than any last year's nest; but now that is all changed and the big garden is the center of interest. First the men gathered the rubbish into heaps and burned it; I envied them that task, and the pungent blue-gray smoke looked and smelt so good. Then they manured it and plowed it. The plowing was beautiful; row by row the velvety brown earth was turned up to the sun and air, the men and horse stepping deftly in the furrows. Then they harrowed it and searched it for Indian arrow-heads, and began planting it to the satisfaction of the blackbirds and grackles who mean to have the peas as soon as they are up.

I can lie in bed and watch the blackbirds taking their dip in the marsh pools. You would be in ecstasy to see one swoop down on sure wing, poise, alight and sway buoyant on a single slender reed.

All this wonder of the spring revives an experience of last year, of inland spring rushing into leaf and flower, not reluctant like this by the sea. I was ensconced in a long chair on the little lawn, too absorbed by the beauty, too listless to read or sew. I had not been in the country in May for years and all my senses were keen for its joys. Big maples in flower, red and yellow, stood on either side, elms with feathery tops towered above me, a lilac bush sent out its fragrance, an old apple tree showed points of pink blossom. The highway ran by the edge of the lawn and dipped sharply down the hill on the left, where between the trees at its foot the lake gleamed and glistened. Directly across the road a low stone wall, broken by tall gateposts, swept in a welcoming half-circle to receive a smooth driveway; a little stone cottage stood on the right hand, backed close upon the hillside, up which climbed a wood of big oak trees in that exquisite state when their budding leaves seem like a faint pale green and pink mist caught in the branches. To the left of the gate a little path led down a grassy slope set with flowers like the sward of a Fra Angelico picture, and the drive itself passed between tall trees till it too turned down the hill and was suddenly lost in a black cavern of big hemlock trees.

It was all so fresh, so fragrant, so flecked with sun and shade, so full of tender color. Only enough air to send whiffs of sweet-smelling things and to move the little white clouds across the high blue sky. And, as if that were not enough, my ears were enchanted with the songs of the birds and my eyes amazed with clear flashes of vivid color; orange and black, a swift streak of pure blue, a brilliant scarlet, unbelievable—I crossed the road to watch him calmly hopping in an oak tree.

Then—I noticed the first one. She walked swiftly, with free light grace through the gate and turned into the littly flowery path. The sunshine glowed on her golden head, bound with a white fillet; the breeze blew back her thin white dress, showing the lovely line of her slim young body; her white-shod feet danced down the slope, and she was gone. They came singly, in twos and threes, in little laughing groups, unloitering; all with that grace of youth and health and freedom, with the spring in their veins—clad in white, in soft blues, rose, violet, deep orange, a yellow like a crocus bloom. The light touched their bare heads, fair, pale gold, glowing red, dusky brown, black, smooth, curly, bound with fillets.

Dryads, nymphs, young goddesses—Greek things alive!

For hours I watched them until, fairly exhausted with it all, I went into the house to rest. Just before sunset I heard again their footsteps and their gay voices and from my window watched them, as in some well-planned masque or pageant, go through the gate down the hill into the black cavern of the hemlock trees. But beyond there was sunlight and the gleaming lake, and soon came the sound of singing and laughter and again and again a joyous rhythmic call, anchored by the altos, low and true, while the sopranos mounted to a clear high note with a little drop at the end. At last, in the stillness and the fading sunset, they emerged from the melancholy hemlocks like a Greek chorus. They did not stop to sing a tragic tale of horror and relentless fate, but with their swift tread of young goddesses, their slender figures gleaming white, they vanished

among the trees. The young May moon and the evening star hung for a little in the pale sky.

I got up stiffly from the window. I suppose I should have felt unutterably sad and old. Tears were in my eyes. But what mattered it if I were as old as Hecuba, and as dead? Spring, youth, beauty, loveliness, would be eternally renewed.

Of course you will shake your head and say: "Oh, no; oh, no! Her black and orange birds are orioles—bluebirds, perhaps; and she may have had the good luck to spy a scarlet tanager; but wood nymphs and young goddesses—oh, no."

IV. DRUMS

My early spring has slipped away into June, June into midsummer, and here I am still. Remember, it was January when I came. What have I now to write of the long weeks? So much, that I will not go beyond the aspect of things, the surface of this strange life I am leading. The depths are there as well as the treacherous shallows; some are horrible, some wonderful; struggles shorn of dignity, the depressing littleness of life and those mystic things like pain, renunciation, death and self-victory that only great poets may put into words.

I have emerged somewhat from my room and mingled more with others, and when you come into touch with people things begin to happen. You perceive those shallows and depths in relation to others as well as to yourself. Your personality in friction with your neighbor's strikes sparks of humor, interest, sympathy, antipathy; you are keen to exchange ideas, impressions, aid, or to run like a frightened rabbit into your hole again. However, the glad thing in being more like folks is that I have begun to weave! I have longed to do it ever since I first saw the looms. You know of old my passion for woven things; how brocade and embroideries, lace and linen delight my soul; how a skein of silk, a hank of yarn, a spool of thread with a bit of stuff, sets my mind at work with stitches and designs, combining colors and textures.

Just imagine a machine that somehow suggests a musical instrument. It has strings and pedals; you pull a thing with a gesture like pulling out an organ stop, and your shuttle flies back and forth with a gay little trill. Best of all, as your excitement and awkwardness abate, you discover that the loom has a distinct rhythm and when things go smoothly you feel as you do when singing a melody that lies just right in your voice. But things don't go smoothly! How long has weaving been used as a simile for the trials of life? Since before Homer wrote the Iliad, I'm sure—knots, tangles, broken threads, jarring colors, things too loose or too taut, mistakes in following the pattern, to be undone and done over again with tribulation. You begin to have a respect for the meanest piece of woven stuff; you realize how great an art weaving is, that you are the most abject of novices, and you become quiet as a child while its mysteries are being explained. There are intricacies of setting up the looms, unwinding the gleaming skeins of sea island cotton onto the big wooden pegs to make the warp, the patient threading of the reeds and knotted heddles for the many designs that date back such hundreds of years (this seems to involve higher mathematics), then the dyeing of great skeins of cotton, wool, linen and silk, enchanting masses that hang drying and dripping color—blue, green, gold, scarlet.

I think I must have had an ancestress who was a finished weaver, I feel such a call to learn all of it. I lie awake planning things white and useful or gorgeous with colored silks and gold and silver thread. The Lady of Shalott must indeed have been accomplished to weave the mirror's magic sights and her web a fairy one to escape from the strong embrace of the loom and fly out of the window.

But alas! I too am accursed—weaving is forbidden—I am a prisoner again looking out of the two windows from my bed.

. . . . . .

Pain and monotony have rather broken down my philosophy. I am in rebellion. The beauty from my windows begins to be detestable; the elm trees, like gigantic jailers, imprison one; their heavy foliage shuts out the air, the sky and its stars. Am I to see a year from these two windows? Will the autumn color steal over the marsh before I get my liberty? I envy everything walking by with free step—birds, dogs, cats, the fleet of white boats on the blue sea, the throbbing airships.

"Prisoners and captives!" How often have I

heard that in church, vaguely thinking of criminals shut up for their crimes, and have with indifferent heart asked pity for them—and I, with these gifts of love, skill, comfort, exquisite cleanliness, rage because I do not belong to myself, because for a few months I cannot rise and go. Prisoners and captives! Think of them by the tens of thousands, prisoners of war, "prisoners and wounded," languishing in strange lands, amid pain and discomfort unthinkable! Like a horror, the thought of every kind of prisoner overwhelms me, and if ever I prayed a true prayer of compassion, I have prayed it these summer months.

It still seems unbelievable that I have exchanged the big elms, the marsh, the beach, and the sea for these long-loved pine trees, the mountain, the river running by, the wide valley. It is still so new that at night I think the wind in the pine grove is the sound of the waves on the beach.

The journey, of course, was a great adventure. We started early, provided with everything the most exacting invalid could need. I had a terrible constriction of the heart at leaving, everyone from Elizabeth up had been so more than good to me; but, as the motor turned the corner that had been the limit of my longest walk in all those months, I began to "look forward and not back." The fresh morning air, the swift motion of the car were exciting. A tipsy Irishman waved us on our way gaily. A little boy on a big farm-horse grinned at us and we grinned back. All the road to town was full of interest; the great beaches were covered with people escaping the great heat; hundreds of half-naked children played delightedly in the sea. As we neared the city, we began to realize what the white haze meant. We crossed the bridges by the ever-romantic ships at their docks and saw them down the glistening harbor and, as the car was caught in the heavy traffic, crowds of hurrying people, great motor-trucks, straining horses, sweating men. In spite of the heat and noise, my spirits rose; it was so good to see all that world of business and labor and men strong enough to do it.

At the station, I sat in the car, on the shady side of that wretched side-street, while the baggage was seen to, and studied the opposite row of dilapidated old dwelling-houses, with greasy steps, battered doors and broken blinds. It was so hot that the blazing street was deserted and the shabby shutters were closed to shut out the fierce sun. At one of the windows was a window-box with a little trellis carefully made of string, and on it grew and bloomed morning-glories, the exquisite, tender flowers of clear blue, pale pink and lavender, flawless white, standing out in purity and delicacy against the ugly background. . . .

What was that land of thought that Kilmeny went to? I feel that I have been to one. Since the day nearly a year ago when the breath of the ether conquered mine and I awoke to a world of pain, I have truly lived in a land of thought. Like Kilmeny I have experienced things horrible and beautiful. Unlike her, it is my home and I wish to remain, that I may love and serve, enjoy the things of earth, beauty and mirth, "books and my friends," to envisage the sadness of this war-distracted world with faith and proportion. I am glad of freedom and happiness in this beloved house. It is such fun to live again with people of all ages and both sexes, but I cannot always connect with the stirring life they lead. My fuse burns out, I suppose. I am content when I can lie these still autumn nights, thinking, listening to the sounds in the valley, the throb of the engine as the train strikes the up-grade, the trot of a horse resounding in the covered bridge over the brook, a late step on the garden path, the rare call of a bird, the constant murmur of the poplars by the gate, and the thud of the little apples dropping on the grass as the breeze stirs the old apple tree by the house door.

But such peace is gone. Last night, as I lay unthinking, near to sleep, broke suddenly into my consciousness the distant throbbing of drums. Nearer, louder they came; with the sound of shouted orders, and by the high road, past the gate came marching men. The terrible, insistent, onward rhythm of the drums urged them by, under the trees. From the window I could see their dim files pass, and could hear the strong sound of their feet upon the road, the creaking of shoes and equipment, almost the sound of their breathing. And then came the crash of music filling the quiet valley. Down the hill they marched, over the bridge into the distance. The band stopped; the cries died away: Only the drums beat on, and my heart with them, "Lives, lives, lives o' men." S. W. H.

The Circean Shadow!* IV

By RICHARD WALLACE TUDOR

HOW shall we educate the architect? In brief, the problem may thus be stated: The education of the architect, be it formal or otherwise, should be so organized and so staged that the true aims of the profession shall, from the very outset, be perfectly obvious to the student.

In attempting to translate the aims and suggestions previously made into a program of action, one is confronted with an almost insurmountable barrier in that we now think of education in terms of subjects, courses, curriculums, examinations, degrees, certificates, diplomas, prizes, and scholarships. With these terms are associated groups of *standardized* ideas relating to formally arranged classrooms, lecture-halls, studios, draughting-rooms, textbooks, paper programs, and methods—cold, academic, static. *Of such is education, the process, and not the organization of experiences.*

Therefore, if we hope to really deal with this matter in a constructive manner, we must abandon, not only the use of these *purely academic* terms in our discussion of the question, but the formulation of a program.

Throughout what follows it must be clearly kept in mind that we are not dealing with "subjects" or "courses"—formal, pre-arranged, imposed, *but with actual personal experiences resulting directly from the stimulation of inquisitiveness in the student.* Precisely what these experiences be named is of little value; that they be actual experiences is essential; this is the all-important matter, for *the stimulation of real inquisitiveness is the beginning and the end of education.*

It is not my intent to arrange a catalogue or time-table of experiences composed to fit everybody and to cover a definite period of years. It is quite sufficient to attempt to open up new vistas—suggest new directions and new avenues of approach.

But how shall we start? What must we consider first? Shall we consider the question in terms of university courses or atelier systems? No indeed! Let us forget all about these—brush them aside—and consider merely an organized activity which we will term simply the Education of the Architect. From now on we are not dealing with universities, systems of ateliers, or conditions of apprenticeship—*we are dealing with experiences pure and simple which must take place in the student's life.*

If these experiences can center in the university, there they may be organized; the same may be said of the atelier or the office. Where they should be organized is a question which I do not propose to answer, for the very essence of education is experimentation.

But we have experimented. Our university courses, our ateliers, our correspondence schools are experiments gone stale—they have been found wanting—they have not provided the student with the essentials of education which we have discussed. Which of these schools can provide the essentials is in itself a subject for experimental demonstration.

So, our problem is clearly defined: We must first state the conditions that shall obtain in the education of the architect and then judge of the fitness of the various kinds of organizations to carry on the work *by the degree in which they actually produce the conditions and yield the desired results.* But what *are* the conditions which should obtain? Let us return to the "first step." Keep in mind that we are now dealing with the boy who has decided (let us assume through his own inclination) to become an architect. He is a real live boy, inquisitive as to his future and the work of his chosen profession, without a very wide experience. What should we do with such a boy? Turn him over to a post-graduate student, a young instructor fresh from the school, with no experience whatever in the world? or to some well-meaning professor who delves into the archives of the past and argues endlessly over terminology and names and who has utterly lost contact, if he ever had any, with the world in which he lives? Shall we set him to doing the "orders" and descriptive geometry and calculus? Most emphatically we should not. Such a boy is neither interested in the "orders" nor theoretical rigmarole, for we assume that he is alive. What such a boy needs

*Continued from the last issue.

is contact with forward-looking men who have had experience in the world, who know through professional association what are the real living aims of that element in the profession which has come to sense its function in a liberal democratic society. *And his work—if it is to interest him—must bear a very intimate relation to what he has already experienced in his world of reality. For education is a growth, a development, and not a coat of paint.*

Therefore we must focus this boy's attention upon "situations" in which it is reasonable to assume that he has some personal knowledge through contact, and hence some vivid personal interest. Such a situation would be expressed in the "home" and its associate interests and activities. Concerning the home he has taken much for granted, and he has not been particularly inquisitive, but that is no reason why the theme would not awaken an interest were the subject first approached from the angle of the social significance attached to the forms expressive of the home which we see about us. By suggestion and inductive methods he will inevitably be led more keenly to observe the curious cramped structures of our cities and industrial communities, the inappropriate and inadequate expressions in small communities and in our rural districts, as well as the more elaborate expression; and if his studies be made in the field (*no other have any value*), he inevitably will begin to search for reasons or causes for the blight which has spread over America.

His introduction to the region of architectural thought must be through contact with social and economic conditions surrounding situations relating to where and how men live and conduct their activities in the world today! This contact with reality will make clear to him that architectural forms are the resultants of complex forces and not merely architectural fancies rendered in materials.

He will become rebellious; but through such rebellion he will recognize, though he may not have acquired the technique of creation nor the sense of final judgment, that by and large the architectural expression of the home in America is a stupid inadequate expression; that as such it not only fails to express a rational life, but it also fails to express the ideals, vague and nebulous though they may be, which actuate the lives of the mass of men. The resulting impulses arising out of his spirit of rebellion will be the desire to create something better; and he will be extremely inquisitive and desirous of acquiring the technique of creation. But the technique of creation, as he will conceive it after his contact with conditions of reality, will be of quite another sort than that of the draughting-room or studio; he will realize, above all, that with all the graphic technique which he may acquire, he will be perfectly impotent unless he also possesses the technique of dealing with the social and economic problems likewise related to the situations with which he has to grapple. "Solving the problem" will be conceived in terms of collective action into which there will enter a group of social and economic factors now utterly ignored by the school.

This first step will be the act of opening the student's mind and of directing it toward developing an ability to formulate a statement of conditions related to actual and not to imagined situations, a statement so phrased as to express a rational ideal, in terms of rational living, and hence in terms of rational indigenous architecture. Then will be the time to consider the technical phases of expression.

For though he may deal, at this stage, with a single element—a single building—in the background of his mind, there will be ever present the relation of that building to other buildings, to the people who are to occupy them, and the social and economic forces out of which they are created and made elements of the world of reality.

And, in dealing with the technical phases of expression, we shall not focus his interest upon the past, nor confine his efforts to graphic expression. The past he will draw upon if he so chooses; his graphic effort will be guided, but we will direct him *away* from academic routine, away from the walled-in room. The real problems of dealing with forms, materials, methods of construction, labor, and the vital-to-art processes of fabrication *will be studied and examined in the field of reality;* and wherever collaborative effort is required to effect a result—as it is in every actual problem—there we will introduce actual collaboration with students in other fields and also actual, intimate, personal contact with the men with whom we are today going through the make-believe gestures of collaboration.

One asks how this can be reduced to courses and labeled with letters and numerals and confined to hours and, at the end of the term, marked in percentages. I do not know—nor do I care—whether this scheme be so reduced to schedule and label. Possibly it would be better (very, very much better, perhaps) if such labeling and scheduling were completely omitted.

Following the inquisitive and constructive study of the conditions related to how men live and of the resultant architectural forms, we should expand the circle of interest until the situation includes the more complex community. Here, as in the case of our study of the more intimate circle, we must use the world as the field for observation. Against the actual conditions will be thrown a concept of a more rational life, and this concept will be conceived in terms of a possible program of action.

Our educational purpose is to develop a dynamic force, not to crystallize a static condition; therefore, the attitude of mind which we must develop is that which will comprehend the varied purpose for which men live in communities and also the nature of physical environment which will be expressive of that purpose and, at the same time, possible of attainment.

But what has all this study of economics and social politics to do with architecture and art and the aims of the profession? Well, what have pseudo-dipteral temples and sexti-partite vaulting to do with the conditions, and, hence, the architecture, of the present day?

Answering the first question, a study along lines suggested will afford the student an opportunity to comprehend the true relation between human needs and architectural expression, for it is this relation which determines the value of architecture. It is alone through such study that the student will grasp the essentials of the problem relating to the creation of a truly adequate environment. He will see the environment as a unit—a single factor to be dealt with; he will understand better the forces to be dealt with; he will, above all, grasp the full force of the fact that his functions and the functions of his profession must be made to extend over a far wider field of interest. He will gain—and this is really the aim of his education—sufficient perspective to appraise the relatively small value of purely graphic effort as a factor in attaining the desired result.

Lest this still appear vague and nebulous, consider what is actually being done in the School of Civic Design in the University of Liverpool, England. It is not that this expresses the attainment of the ideal—it does not—but rather it is an experiment in the right direction. The essential facts are that architects, engineers, and town-planners are brought into extremely close contact. Much of the work relates to real situations; contact is actually made with the world of reality.

Take a problem, by way of illustration: Ten years hence it is known that the industries of a certain mining town are to vanish because of the exhaustion of the coal-fields. What should be done? This is the problem. Out into the field are the students sent to make the needed surveys, physical, social, and economic, and to confer with the local authorities, engineers, and citizens. The purpose of the problem is to develop a program suggesting what action should be taken; the students are to present their solutions in the form of statements with graphic illustrations. Town-planning, architecture, and engineering are the terms in which the suggested program of action is to be presented.

The results of this particular study were obvious; there was a mutual expansion of concept of function on the part of the various students and government officials. The school, the community, and the state were brought into close contact; a mutual understanding of aims and purposes was established. There was thus formulated a suggestion which now serves as an axis around which all individual and collective action in this community revolves. As I understand it, the local authorities are actually developing a program of political action based upon the suggestions formulated by the students.

This is a suggestion which is headed in the right direction. And it has to do with architecture and art, though with our rather limited concept of what constitutes architecture it may seem to us far-fetched.

Another interesting example of the possibilities of developing this theory of architectural education is the competition announced in the last number of the Journal. It is, to my mind, the first effort ever made in this country to introduce all the vital factors into an architectural competition.

(To be concluded.)

Drawn by Felix Benoist. Lithographed by I. Arnout. Figures by A. Bayot

PARIS IN 1620
General View from the Butte Chaumont, after Mérian
See page 291

Drawn by Felix Benoist. Lithographed by Eugene Ciceri. Figures by A. Bayot

PARIS UNDER LOUIS XV

View from near the Arsenal, after an engraving of 1730 by J. Chafourier

See page 291

Drawn by Felix Benoist. Lithographed by I. Arnout. Figures by J. Gaildrau

PARIS IN 1650

The Palace of Justice and the Seine, after Boisseau, Israel Silvestre, and others

See page 291

Lithographed by Ph. Benoist

PARIS IN 1650.—After an engraving by Israel Silvestre
See page 291

The Plan of Paris

THE DETERMINED PROLONGATION OF THE RUE DE RENNES AND OF THE BOULEVARD HAUSSMANN, AND OTHER INTENDED MEASURES, SEEN IN THEIR CONNECTION WITH THE TRANSFORMATIONS BY NAPOLEON AND HAUSSMANN

By NILS HAMMARSTRAND

IN the year 1914, shortly before the outbreak of the current war, the city of Paris raised a loan of 900,000,000 francs, intending to spend about half of this sum on extensive changes in street circulations. He who visited Paris about that time could scarcely have failed to observe that regulative measures on a large scale actually had begun to be carried into execution in different parts of the city; walking about in the dense central quarters nearest the Seine, one often met with hideous gaps, cut right through a block, and indicating the future course of a new street, or plowed along an existing street to make it wider.

Moreover, accounts and discussions in the press called one's attention to the many problems and questions that are involved when a "glorious," large and old city undertakes to rejuvenate itself, endeavoring to balance its progressive aspirations with its obligations to tradition. Esthetic questions arise which are of the most delicate nature. It is not sufficient to respond in the cheapest and quickest possible way to the requirements of utility and traffic. It is especially not sufficient in the case of such a city as Paris, upon which the whole world looks as the "city of cities"—the representative city.

More keenly than ever, cities at the present time are alive to the delicacy of such improvements. For the last few decades have certainly developed our esthetic conceptions, as regards architecture, toward a more just, a more shaded appreciation of the artistic ideals and the corresponding creations of widely different ages. The nineteenth century worshiped and imitated the different architectural styles according to their letter, one after another in transient succession; the beginning twentieth century shows, while striving to express or at least to define architectural ideals of its own, a growing capacity to grasp the spirit of the historic styles and to estimate, in a more unprejudiced way, their individual artistic qualities. This makes us more concerned when new schemes are planned whose execution will entail the destruction of recognized architectural creations. And, moreover—and this is the real gain—we are no longer ready blindly to accept schemes of improvement that seriously endanger the effect of artistically prominent buildings by awkward alterations likely to create a new and defective relation to their surroundings.

The city of Paris has in the past seen too many instances of such rash encroachments not to be on its guard at the present date. No longer does one enjoy "the stately appearance" that Napoleon I, and after him Napoleon III and Haussmann, were aiming at when clearing away those structures, close to Notre Dame, which formerly enhanced the towering effect of the wonderful building. Nor is one apt to remember without regret the loss of those marvelous groups of buildings that once formed the monasteries of St. Germain des Prés and of the Temple and the destruction of which was a consequence of the great revolution. Paris has seen a terrible devastation of its medieval monuments ever since that date. To a great extent this has been unavoidable. The present generation feels it as an obligation, not to the Middle Ages, but to itself and its descendants, to try and obviate the execution of designs that may involve irreparable artistical losses. And it extends its care to everything, deriving from modern or ante-modern times, the knowledge with which to protect and, if possible, to preserve, in the interest of the city, the country, and humanity.

These introductory, somewhat retrospective, reflections on esthetic questions of general interest connected with city improvement may be justified, considering the intention chiefly to deal in the following with some schemes whose esthetic and historic aspects are especially interesting.

The intended prolongation of the Rue de Rennes and its connection with the north bank of the Seine through a new bridge, is one instance. The Rue de Rennes is, as all who are acquainted with the present topography of Paris well know, one of those important diagonal streets, the creation of which by Napoleon III and Haussmann, was due to the necessity to connect the newly established, acentric railway terminals with the inner parts of the city. One of these diagonals, the Avenue de l'Opera, is particularly important from the viewpoint of traffic and, moreover, enjoys world-wide reputation on account of its distinguished esthetic qualities. The Rue de Rennes is perhaps less important and surely less famous. But during the year preceding the outbreak of the war it was an object of interest, attracting attention through the discussions concerning various schemes for its prolongation. For years this measure has been an urgent necessity in consequence of the growth of traffic. Originally meant to continue to the Seine embankment, the Rue de Rennes now extends only from the Gare Montparnasse to the Boulevard St. Germain. Its interruption at the latter point has long caused serious inconveniences to communication. All intercourse between the Gare Montparnasse and the great railway terminals north of the Seine—the Gare St. Lazare, the Gare du Nord and the Gare de l'Est, has been forced to find an outlet, either through the east and west branches of the Boulevard St. Germain, reaching its destination by wide circuitous routes, or, more directly, through the narrow, obstructive Rue de Bonaparte and Rue des Sts. Pères, both quite insufficient for quick transit.

Nevertheless, the extension of the Rue de Rennes has been unduly delayed, being a problem which presents

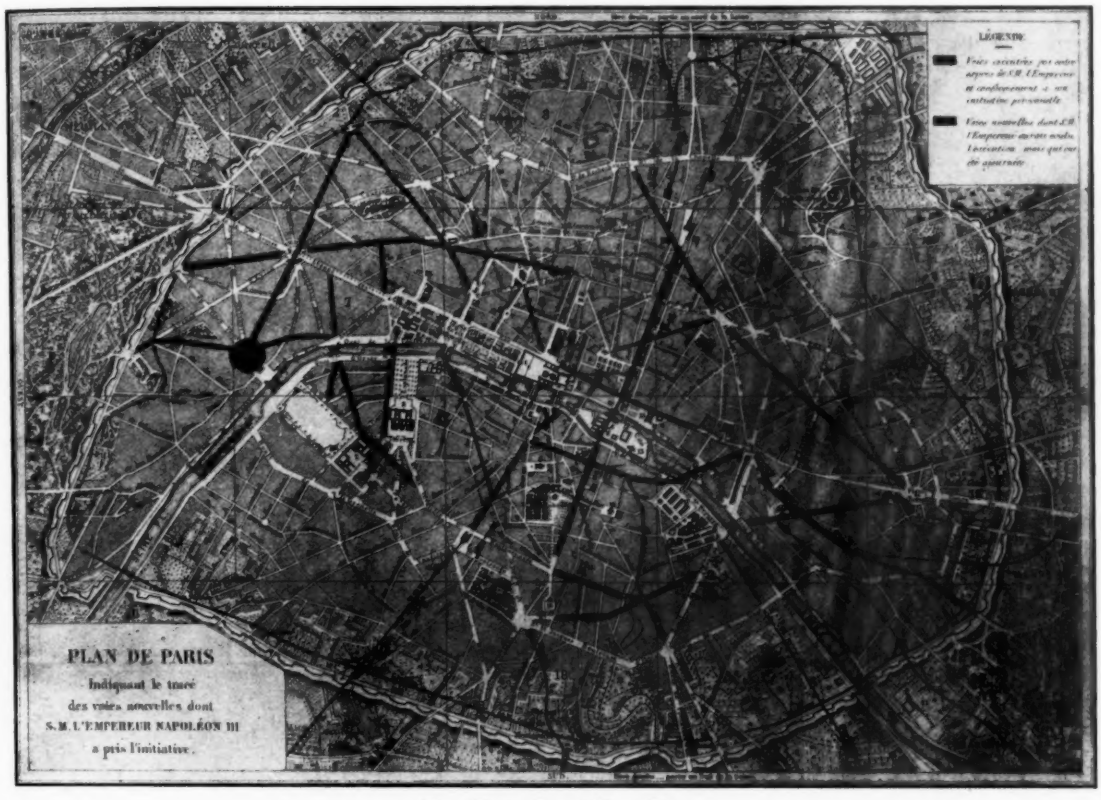
THE RIVER SEINE, SHOWING THE BRIDGES AND THE INSTITUTE OF FRANCE IN THE MIDDLE DISTANCE

unusual difficulties. The necessity for constructing a new bridge across the river has been one crucial point of the question, involving, as it does, many practical and esthetic considerations. But the proposed disengagement of an important monumental building, l'Institut de France, also has caused serious trouble.

The proposal to disengage l'Institut de France in connection with the prolongation of the Rue de Rennes was originally due to Napoleon III and Haussmann, who hailed the possibility to disencumber this building—dégagements of monumental buildings being one of the main objects of the transformations. This disengagement has, however, met with opposition from many sides, as it would involve the destruction of the rear wings of the building partly added during the time of Napoleon I, who let the architect Chalgrin enlarge the original structure erected by Le Van during the reign of Louis XIV. But, unfortunately for the advocates of this preservation, the prolongation of the Rue de Rennes, as proposed by Haussmann and Napoleon, follows the shortest possible line of communication and, besides, has been adhered to by a mighty group interested in its execution. The originators of the project wanted to prolong the Rue de Rennes along a straight line from the Place St. Germain des Prés to a point on the embankment between l'Institut de France and Hôtel des Monnaies, intending to provide a new bridge from this point to the opening of the Rue du Louvre on the north bank. The traffic through the Rue de Rennes must find its most immediate outlet on the north bank this way, because the Louvre structures block the whole distance between the Rue du Louvre and the Rue des Tuileries, offering only narrow passages through *les guichets des Saints Pères* that lead to the Place du Carrousel.

On viewing the project by Napoleon and Haussmann a little closer, we find that it disengages l'Institut de France by forming outlets, of which the Rue de Rennes is one, symmetrically to the east and west side of l'Institut. These forking streets embrace a considerably extended regular area that in its entirety would belong to the owners of l'Institut, providing them—as an indemnity for the loss of the demolished rear wings—with an extensive additional building plot, highly suitable for the enlargement of the original regular building.

This compensation was in fact considered so advantageous that the French Academy, which owns and occupies the building, far from opposing these alterations, has considered them highly desirable and supported a disengagement according to this project. The troubles only began when the authorities of the city, some years ago, pro-



THE "PLAN COLORIÉ" OF PARIS

pounded another scheme, framed by the present "Service du plan de Paris." This plan differs inasmuch as it traces the streets, not along straight, but along slightly curved lines, and leaves a smaller, available building area adjoining l'Institut. In order to compensate for the ground loss, the city offered the Academy adjacent building plots along the new streets, but the Academy objected, its majority regarding the matter only from the viewpoints of economy and convenience. Some of its members invoked, however, the names of Napoleon and Haussmann and argued in favor of the original project as being, in their opinion, superior from an esthetic viewpoint.

But it was exactly esthetic considerations that induced the "Service du plan de Paris" to make its proposal, which also won the support of the city authorities. To the rigidly stiff original project, they preferred this more flexible scheme which promises a variety of aspects and to make l'Institut de France an effective feature in an interesting vista. Thus, the esthetic interests of the city, as interpreted by the "Service du plan de Paris," were in this case opposed to the material interests of the Academy—and the question probably still awaits its final solution.*

*In this connection, a proposal by M. Eugène Hénard may be mentioned, aiming at the prolongation of the Rue de Rennes, straight to a point on the Seine west of l'Institut, and the construction of two bridges crossing each other and forming together a composite structure of X-like shape. See, Eugène Hénard: Études sur les transformations de Paris: Projet de prolongement de la rue de Rennes avec pont en X sur la Seine.

A more conclusive result was attained by the city in the even more delicate question concerning the erection of a new bridge across the Seine. Napoleon and Haussmann planned the new bridge to be constructed in a position between Pont Neuf and Pont des Arts, having in view a composite structure formed of two bridges, one across the north and one across the south branch of the river, linked together at their common point of support on the west extremity of the Ile de la Cité and forming an obtuse angle with each other. This project certainly provided a very direct line of communication but, nevertheless, raised serious objections. It was considered that such a bridge would encumber and obstruct the magnificent view from the Pont des Arts and the embankments toward the Pont Neuf and the Ile de la Cité—that highly admired view which so splendidly and peculiarly combines monumental dignity with picturesque charm. The desire to preserve this beautiful prospect proved, in fact, stronger than those practical reasons which recommended a choice of the shortest possible line. A solution was found in the reconstruction of the Pont des Arts, first officially suggested by M. Felix Roussel, member of the city council, but in reality corresponding to a long prevailing general desire. The Pont des Arts, an ugly iron structure raised above the levels of the embankments and, thus, only to be used by pedestrians, is both by its charac-

General View of the Palace of the Institute of France.—From "L'Institut de France" by Franklin and Perrot

ter and its height, disturbing to the effect of its architectural surroundings. The bridge, constructed on the initiative of Napoleon I at the beginning of the last century, is interesting as one of the first iron bridges erected. The circumstances connected with its origin also are interesting. The community of Paris had nothing to do with its erection. Napoleon, reviving the tradition of *l'ancien régime*, was, practically, a dictator in matters concerning improvement of his capital as he was in matters of state. By law of March 15, 1801, the emperor ordered three new bridges to be built in Paris; one of them was the Pont des Arts. For the financial management of these works private companies were formed, licensed to tax the traffic across the bridges during a limited period. But the construction had to be supervised by the state; it had to take place *sous la direction immédiate des ingénieurs des ponts et chaussées*. Among men of esthetic judgment the Pont des Arts caused displeasure from the first moment. The project was thus severely criticized by the architects of the emperor, Fontaine and Percier: "*il était a craindre qu'un pont en fer produisit un effet de contrast mesquin auprès de monuments tels que le Louvre et le Collège des Quatre Nations* (*Institut de France*)." Even the emperor himself, with whom a predilection for the new-fashioned iron constructions had occasionally manifested itself, seems later, when seeing the bridge completed, to have raised objections, finding it ridiculous to erect a structure of this kind at this place—in a country abounding in the most excellent building-stones—an observation expressing sound practical judgment and very characteristic of the emperor.

Nowadays, few will deny that the bridge is out of place and has served its time. From an esthetic point of view the advantage of a bridge replacing the Pont des Arts would, thus, be twofold: it would provide the desirable and more dignified connection, across the river between l'Institut and the Louvre, and, at the same time, save the Seine perspective from being obstructed. All esthetic considerations support this proposal. In favor of the other alternative, a bridge in the prolongation of the Rue de Rennes, there lies, on the other hand, a practical advantage—its directness. Thus, the question to be answered was, whether the possibility of shortening the road by two hundred yards would constitute a gain great enough to outweigh the factors on the other side of the balance. When answering this question in the negative, the planning authorities of Paris offered, it seems, an example of sensible judgment, worthy of being imitated in similar cases, where considerable esthetic values are at stake or to be gained. Those opportunities are, under all circumstances, so few that it seems as if we ought to be able to afford such a generosity in this age of swift vehicles.

The chief aim as to traffic seems, at all events, to be the attainment of the greatest possible convenience and security. These factors work practically, in our overcrowded monster cities, to the advantage of the greatest

THE PALACE OF THE INSTITUTE OF FRANCE AFTER AN OLD WOOD-CUT.—From "L'Institut de France" by Franklin and Perrot

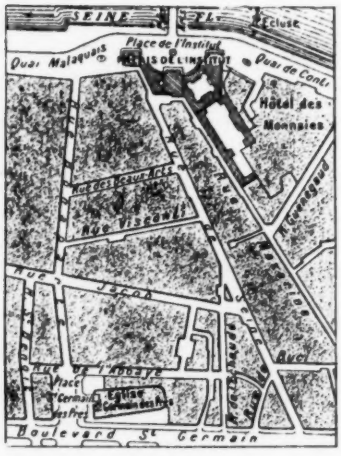
possible speed. Arrangements aiming at a rational distribution of traffic are the most important of all measures to be taken in the interest of rapid communication. It is, then, interesting to note how excellently such ends will be served by the reconstructed Pont des Arts in combination with the proposed arrangement of the Rue de Rennes. The traffic along the embankment is comparatively small, but yet there lies a great advantage in the possibility of distributing the intersecting traffic to both sides of l'Institut, allowing on each side only traffic in one direction. Through such an arrangement the mutual obstruction of streams of traffic intersecting each other at right angles would be greatly diminished.

In the construction of a new monumental bridge, for all sorts of regular street traffic, in the position of the Pont des Arts, this project seems thus to offer a very happy solution. The costs for the extension of the Rue de Rennes and the construction of the new bridge are estimated at 38,000,000 francs.

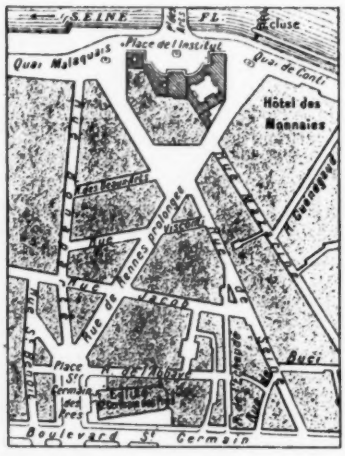
The efficiency of these measures will, however, partly depend on the realization of other intended steps on the north bank of the Seine. It has already been hinted that the planned part of the Rue de Rennes and the projected Pont des Arts are largely meant to facilitate communication between the Gare Montparnasse and the great railway centers in northern Paris. One of these, the Gare St. Lazare, is situated so far to the west that its chief communication with the Gare Montparnasse follows, and will continue to follow, the route via the Place de la Concorde, passing through the Rue Royal, Boulevard St. Germain and Boulevard Raspail. It is the communication between, on one hand, the Gare Montparnasse, and, on the other hand, the Gare du Nord and the Gare de l'Est that will reap great advantage from these improvements. This traffic will, at least for the greater part, cross the river over the new Pont des Arts instead of directing itself, as hitherto, over the Ile de la Cité by the Pont St. Michel and the Pont au Change. It will naturally avail itself of the connection across the new Pont des Arts, provided certain planned regulations on the north bank of the river are carried out. These measures, aiming at a radical transformation of the quarters around Les Halles, will conveniently connect the Rue du Louvre with the Rue de Turbigo, Boulevard Sebastopol and Boulevard de Strassbourg, that great north to south thoroughfare that was projected by Napoleon and completed by Haussmann, in order to give the Gare du Nord and the Gare de l'Est easy access to the center of the city.

The quarters between the river and the great inner boulevards will, on the whole, be the scene of most significant changes in circulation—measures which the development of traffic and hygienic needs have necessitated and which, at the same time, for a great part, are the direct logical continuation of the transformative work of Napoleon and Haussmann. Such a measure is, for instance, the planned extension of the Rue du Louvre to the Rue Montmartre, intended to effect a junction with the inner boulevards and thus promising to greatly increase the value of the Rue du Louvre as a north to south thoroughfare.

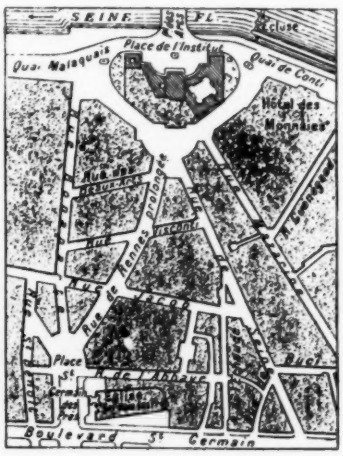
At the present moment the Rue du Louvre terminates at the Rue Etienne Marcel. This last mentioned street, extending east to west from the Boulevard Sebastopol to the Place des Victoires, was, like the Rue du Louvre



PRESENT CONDITION



ORIGINAL PROJECT FOR EXTENSION OF RUE DE RENNES AND DISENGAGEMENT OF THE INSTITUTE OF FRANCE.

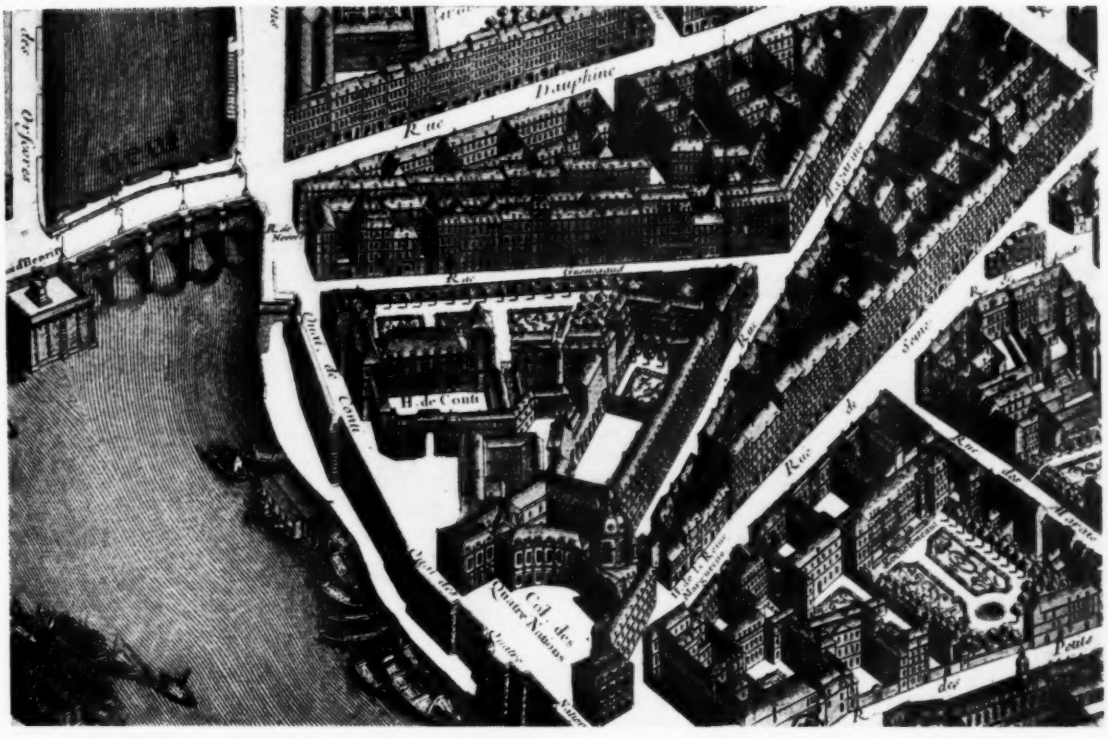


ALTERNATIVE PROJECT BY THE "SERVICE DU PLAN DE PARIS"

between the Rue de Rivoli and the Rue Etienne Marcel, projected by Haussmann. Its continuation to the west, beyond the Place des Victoires, is the narrow Rue des Petits Champs that intersects the Rue de la Paix near the Place Vendôme and, under the name of Rue des Capucines, reaches the inner boulevards at the junction of the Boulevard de la Madeleine and the Boulevard des Capucines. In order to make this east to west thoroughfare more effective, it is intended to widen the Rue des Petits Champs and the Rue des Capucines and to continue the Rue Etienne Marcel east of the Boulevard Sebastopol as far as the Boulevard Beaumarchais, thus duplicating that east to west line of communication which Haussmann created, somewhat more to the north, in the Rue du Quatre Septembre and its continuation, the Rue Réaumur. This scheme, for the execution of which a long time is calculated, is especially interesting inasmuch as it affects the destiny of the Place des Victoires—Mansard's creation from the end of the seventeenth century—that already has suffered badly through transformations and neglect and the whole existence of which in reality seems threatened through the proposed enlargement of the Rue des Petits Champs and the planned disengagement of the adjacent Banque de France.

It is also interesting to note how the creation of these east to west thoroughfares, combined with the opening up of diagonal streets to run right through dense quarters, tends to radically change the topographic character of this section of the city. The same transformation gradually announces itself also on the south side of the river—though there far less pronounced—the direction from east to west being of less importance from the viewpoint of traffic. Ever since the Renaissance got a real foothold in France, this transformation has, first vaguely, then more distinctly, asserted itself within the central region of Paris now circumscribed by the inner boulevards. Its topographic appearance at the time of the Revolution may, however, be mainly characterized as "radial and concentric." As to the general structure of its plan it gave, at that date, chiefly an enlarged picture of the fortified city of the Middle Ages. Isolated modern features within the enframing polygon of the inner boulevards—as the Place des Vosges, Place Dauphine, Place des Victoires, Place Vendôme, some embankments, some narrow, but straight streets, either rectified or wholly modern, like the Rue de Richelieu—could not, as little as the boulevards themselves and the Place de la Concorde, relieve the central regions of Paris from their medieval density and general impression of haphazard growth. But some of these elements—foremost the inner boulevards, Place Vendôme and Place de la Concorde—were to be joined into a comprehensive system of more radical modernization, forming some of its most important links and joints like, also, those more peripheral modern features already existing at that date: the framework of the outer boulevards only just beginning to form, along the "*mur des fermiers généraux*," the Avenue des Champs Elysées and the Place de l'Etoile, Avenue de Vincennes and the Place du Trône, Champ de Mars and les Invalides with their adjoining systematically laid out roads. The nineteenth century was to link up and weld together these scattered elements, many of which originally were features of garden design, making them effective, cosmic members of a systematic whole.

It is this synthetical process that has actually formed the modern Paris of today, beginning with those comparatively very radical transformations that opened the Rue de Rivoli from the Place de la Concorde to the Rue des Pyramides and which did away with the seclusion of the Place Vendôme by opening the Rue Castiglione and the Rue de la Paix, and started to recast the topographic mold of the Ile de la Cité—to mention some of the achievements during Napoleon I, all according to or at least inspired by the projects contained in that much-discussed document, the *Plan des Artistes*, which so palpably illustrates some aspects of the history of the Revolution. Haussmann mentions the *Plan des Artistes* in his *Mémoires*,


Dauphine
Rue
Rue Guenegaud
Rue de Conti
H. de Conti
Rue de Seine
Rue de Nevers
Rue de Bourbon
Rue de Richelieu
Rue de Vaugirard
Rue de Tournon
Rue de Condé
Rue de Tournon
Rue de Vaugirard
Rue de Richelieu
Rue de Seine
Rue de Nevers
Rue de Bourb

is a measure originally planned by Napoleon III. The emperor's part in the transformations after the middle of the last century, more than generally is realized or admitted, was a creative one. In reality, the Boulevard Haussmann itself forms part of a most important line of communication, the whole extent of which was devised by the emperor. Beginning at the Place du Trône (now Place de la Nation) on the east, it extends, on a wide curve to the north, to the Bois de Boulogne on the west. The plan shows how ingeniously Napoleon utilized some of the old boulevards—St. Martin, St. Denis, Bonne Nouvelle, Poissonnière, Montmartre—as links in this chain, adding Boulevard du Prince Eugène (now Voltaire) from the Place du Trône to the Place de la Republique, Boulevard Haussmann and its continuation to the west, Avenue de Friedland, between Boulevard Montmartre and the Place de l'Etoile, and finally the Avenue de l'Imperatrice (now the Avenue de Bois de Boulogne) from the Place de l'Etoile to the Bois de Boulogne. If the great railway terminals on the north are compared to great reservoirs, this line of communication represents an enormous compound main that in a very direct way conducts east- and west-bound streams of traffic.

In this conception we recognize that admirable logical consistency that, on the whole, is a distinct keynote of the modern transformations of Paris—it may also be called an infallible feeling for style; so harmoniously are logical thought and spontaneous sense of beauty in reality amalgamated, that the city as a whole, medieval and modern, seems an infinitely varied, but harmonious unit. Thus, there is a striking clearness and simplicity, as well as an accomplished formal beauty, in the general tenor of Napoleon's scheme for this great traffic artery. It constitutes, in a way, a key to an understanding of some leading ideas underlying the methodical conception of these transformations and seizable in the composition of some of their most essential and most remarkable features. When framing this wide-reaching line of communication, Napoleon created, on an extended and magnificent scale, a standard that he repeats when tracing, on the south bank, the Boulevard St. Germain, extending in a wide curve between two points on the river, and a similar, but more peripheral "main," of old and new boulevards linked together in a chain from the Pont d' Austerlitz on the east to the Pont de l'Alma on the west. These two varieties of the type are only, according to different requirements on account of various local conditions, less pretentious as to their extent, as well as to their articulation.

In fact, this document seems, when its various aspects are scrutinized and its different qualities weighed, to entitle its author to a distinguished place among men of formative genius who have utilized artistic city planning. The memory of the emperor, obscured in consequence of unfortunate political events, seems admirably perpetuated through this achievement in a field that nowadays perhaps has a less pronounced relation to state politics.

The decision to complete the Boulevard Haussmann has given us an impulse to express such an estimation. The intended extension of the Boulevard Haussmann means the final accomplishment of one of the main schemes evolved in the "*plan multicolor*." But here, as in the case of the Rue de Rennes, the execution will possibly not exactly follow the lines of the original project. In this instance, as in the other one, the deviation is very characteristic of a lately prevailing tendency in Parisian planning toward more flexible form whenever its elaboration seems advantageous and possible. We recognize this flexibility in the architect Louis Bonnier's alternative project for the prolongation of the Boulevard Haussmann and its connection with the Boulevard Montmartre at the junction of this boulevard and the Boulevard des Italiens. Such a solution as this project presents would scarcely have been tried in the days of Haussmann, not even in a case like this, where the sinuous lines most perfectly answer the purely practical purpose to increase the traffic capacity of the junction through a more spacious arrangement. The treatment of this irregular space, slightly regulated in a quite unforced manner, has a piquant charm and an artistic ease mostly looked for in vain in the conception of details by Haussmann and his collaborators. A certain careless rigidity, characteristic of their plans, is surely largely due to a rash execution, but, apart from this, the spirit in which they conceived their schemes was somewhat different, less devoted to that careful study of details which produces shades of effect, more "classically broad," but also a trifle doctrinal, more bound by traditional maxims and, on the whole, more ready to "line along along the rule."*

Thus, a new aspiration for more variety of expression may be recognized. But this does by no means signify any departure from the course of tradition. Both in practical and esthetic respects the planning of today and the planning of two generations ago are closely connected. For in a practical respect the transformative work of Napoleon and Haussmann, in its farsightedness, systematical thoroughness and irresistible grasp of the problems, was at least fifty years ahead of its time. Esthetically, as to its general formal aspect, it was and constantly is in good harmony with the special practical spirit of contemporary purposes. More recent endeavors within the field of town-planning, however worthy of observation and capable of stimulation they often may be, are not able to controvert the fact that the city plan of Paris, in its modern traits, is a standard creation of its kind, wonderfully adapted to contemporaneous needs, never attained elsewhere and, far less, surpassed. But in this art, more than in most, the "model" is to be worshiped without absolute devotion and to be imitated with intelligent discrimination—something that town planning of the nineteenth century too often forgot when "working under impressions from Paris."†

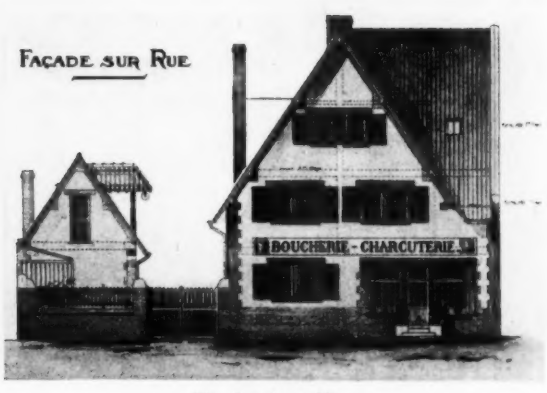
*There have been made several suggestions aiming at the solution of this problem; among them is a proposal by M. Eugène Hénard to form an enormous circular place at this junction. See Conseil Municipal de Paris: Rapport au nom de la 2'commission sur la circulation générale des voitures et des piétons à Paris. Présenté par M. Emile Massard, conseiller municipal.—Concerning the project by Louis Bonnier see: Conseil Municipal de Paris. Memoir No. 14. 1909.

†For a complete list of the works now planned in Paris and additional text we refer the reader to:

Conseil Municipal de Paris, 1910: Rapport au nom de la 5e Commission sur le plan de campagne d'operations de voirie à engager sur la première fraction de l'emprunt de 900 millions. Prèsenté par M. Adolphe Cherioux, conseiller municipal.

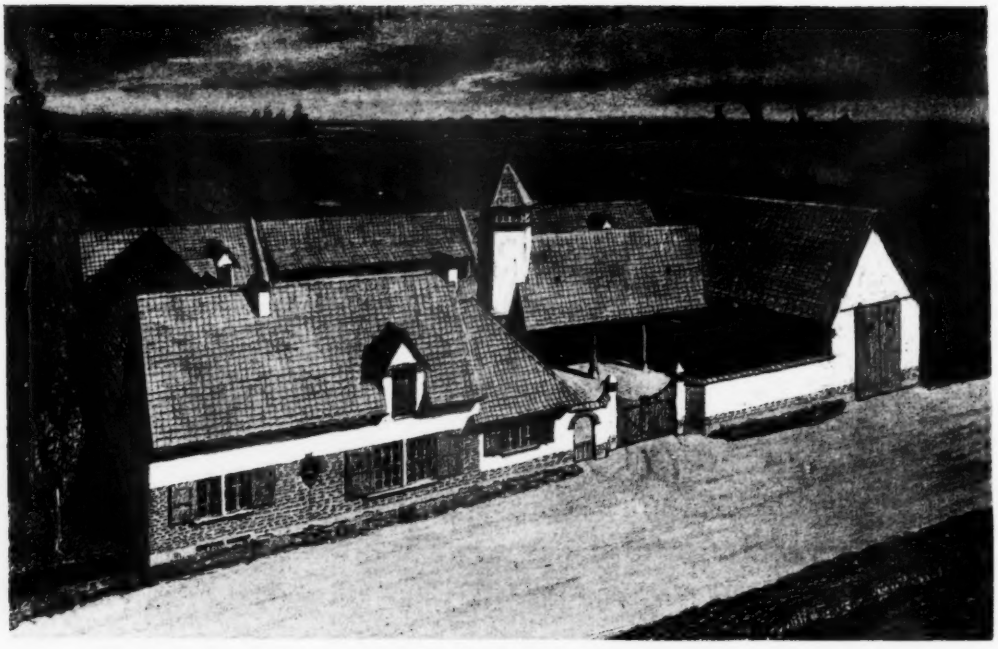
An Isolated Farm of Medium Size

The Horseshoer's House

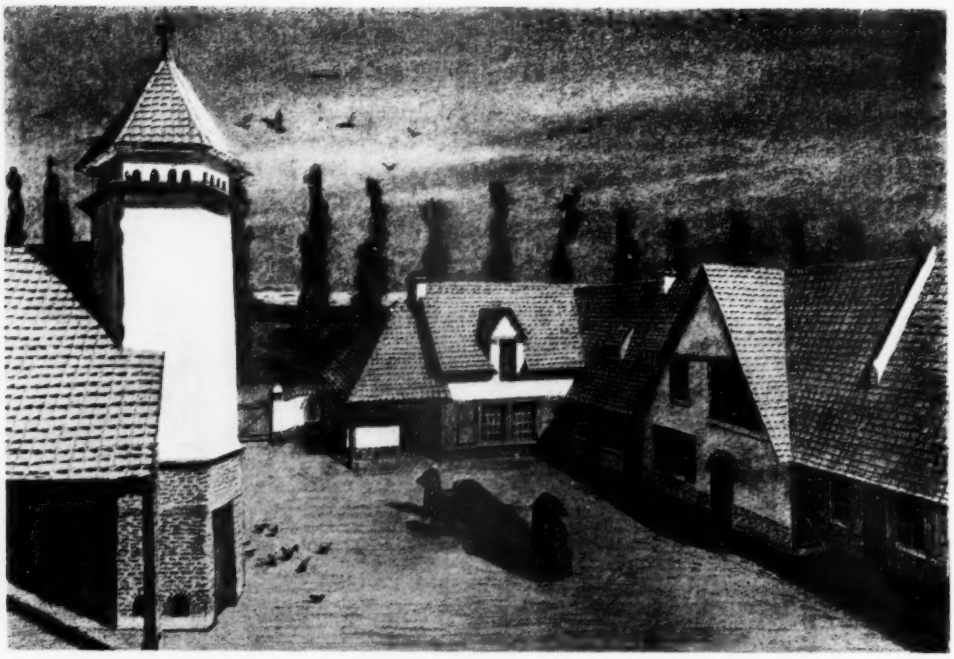


The Butcher's House

PLANS FOR THE RECONSTRUCTION OF FRANCE. (SUBMITTED IN THE RECENT COMPETITION INSTITUTED BY THE FRENCH GOVERNMENT)



View from the Road



View of the Court

An Isolated Farm of Medium Size.—M. Sezelle, Architect
Plans for the Reconstruction of France. (Submitted in the Recent Competition Instituted by the French Government)

SOME OF THE NEW WAR BUILDINGS IN WASHINGTON

Photograph taken from the top of the Washington Monument, looking westward toward the Potomac, showing the group of new temporary office buildings in Potomac Park near the Lincoln Memorial. The row of trees in the foreground indicates Seventeenth Street. The diagonal street from left to right through the center is North B Street. At the intersection of these is the Pan-American Building. To the right are the frame buildings for the Council of National Defense and the Food Administration, with that of the Fuel Administration directly in the rear. Other buildings are those of the War Trade Board, Ordnance Department, and Quartermaster General.

In the center foreground is the group of reinforced concrete buildings now being built for the Navy Department, while farther back toward the river are the group for the War Department. These structures for the Navy and War Departments are vast in size, are of reinforced concrete, and have involved an enormous expenditure for piling.

Photograph by courtesy of the Commission of Fine Arts

SOME OF THE NEW WAR BUILDINGS IN WASHINGTON

Photograph taken from the top of the Washington Monument, looking eastward toward the Capitol. In the center are the very extensive group of buildings for the War Department, including the Surgeon General's building, which is the nearest one of the main group. Fortunately, in planning these groups, the main vistas were preserved.

To the left center is the New National Museum building. At the right is one of the wings of the building of the Department of Agriculture, with the uncompleted building for the Freer Art Museum directly behind it.

These buildings, as well as those on the opposite page, are avowedly temporary and to meet a war emergency. In the legislation providing for their erection, the Government is morally pledged to their removal after the war. This will be done, without doubt, since the plan for permanent buildings, reported to Congress by the Public Buildings Commission, contemplates the use of all the area occupied by the temporary buildings in this illustration.

Photograph by courtesy of the Commission of Fine Arts

Governmental Mobilization of the Building Industries

IN THE April Journal the Institute announced its intention to call a conference to discuss the possibility and advisability of federating the building industries of the United States. In the May Journal there was published the formal call which had been sent to the representative national organizations in the field.

In the last few weeks the officers of the Institute have been occupied with a serious study of the conference. As the time drew near for the conference itself, however, the small number of acceptances appeared to indicate either a lack of interest, or that the effort of the Institute seemed to many to be a duplication of work which was being done by the Government itself. The latter indication seemed to be so strongly corroborated that it finally was judged that the conference was not only unnecessary, but would be as unwise as it would be purposeless.

Undoubtedly the work in mobilization of the building materials interests that has been done and is planned for by the War Industries Board now leaves little need for a federation such as the Institute and its advisors had in mind. Many of these groups are now in such close contact with the Government's agents that any further duplication of that contact would be unnecessary. To those who are aware of the scope and details of the planning of our resources as vital to the successful conduct of the war, it must appear that the Government has made a very appreciable progress.

In spite of the multiplicity of avenues of communication which exist in this country, it is impossible to let public information keep pace with the rapid and ceaseless progress of the Government. As a result of this lack of public information, and also because of the murmurings which are heard from the various businesses and industries which seem to feel themselves discriminated against, there do arise serious misunderstandings and criticisms.

The publicity given to the correspondence between Senator Calder and Secretary McAdoo has, to many, made it appear that the building industry was being unwarrantably injured, that its interests were being needlessly sacrificed, and that the Government had acted unwisely and was now penitent and ready to right all wrongs in this direction. But again we call attention to the only possible factor which can influence a decision as to whether or no a building should be built at the present time. Will it retard or impair our prosecution of the war? If it will, it must not be built; if it will not, then it should go ahead.

But into the answering of that question there enter more factors than can yet be assimilated, except by the few men in Washington who are daily made aware of the serious shortages of this or that material, the serious congestion of this or that line of transportation, the serious shortage of labor in localities where it is needed. Perhaps there is no man who can try to relate all these factors and give a perfectly just answer as to whether a building operation should proceed or not. The man on the spot can help a great deal. If the architect and the client discuss the project from a purely unselfish and patriotic point of view, they are very likely to come pretty near to the right answer themselves. If, after a conscientious survey on their part, they feel justified in going ahead, their case may be sent to the War Industries Board with the certainty that it will receive an equally conscientious consideration at its hands.

In line with the Government's steady perfection of organization, there seems to be no reason for doubting that all our industries will be more and more thoroughly mobilized, that there will be an accompanying mobilization of manpower, and all kinds of industrial projects, including building, will require governmental sanction ere they are allowed to proceed. More and more the seriousness of war is being realized; more and more do we become aware of the paramount necessity for perfecting our industrial organization as the only means of attaining the end we seek. To ignore that fundamental would be to commit the nation to a policy of squandering not only its resources but the lifeblood of its defenders.

"Haasenstein & Vogler"

THE Convention authorized the Board of Directors to redraft the clause in the Circular of Advice which relates to advertising, and the Board has referred the question back to the Special Committee on Advertising, the report of which was published in the April Journal.

We do not wish to complicate their labors, for they are already complicated enough. If evidence in that direction were needed, we would like to point out one or two little episodes which brighten these present days of serious consecration to larger things. For example, in an important newspaper which serves a vast community not more than a thousand miles from Marcus Hook, we recently noted the following item:

"———, the architects have completed the plans and are asking for bids on ——— houses to be erected at ——— for the United States Shipping Board. . . . As was expected, the plans are, perhaps, the best that have been turned out as yet by any architectural or engineering firm for community houses. They combine both beauty and usefulness, and, unlike numerous plans for governmental housing, they have a tendency to be permanent.

"Mr. ———, who had charge of the designing, has made good use of his study of the housing problem, which took him to the allied countries abroad and throughout the United States."

Now there are many interesting phases to this little announcement, which indicate the unusual intelligence of the reporter and the shining perspicacity of the city editor. While one might at first feel that the Department of Justice should take note of the fact that someone has discovered that we have allied countries throughout the United States, it is perhaps well to inform such persons that the inverted phrase is in reality a singularly well designed arrangement of words. We understand, for example, that Mr. ———'s studies in housing took him a great deal to Germany, some years ago, but as this would not be a desirable fact to display at the present moment, the allied countries are alone mentioned. This makes it appear, and without harm to Mr. ———, that he has recently visited the lands of our Allies, a statement well calculated to emphasize his broad conception of the housing problem, as explained in the statement that the houses combine beauty and usefulness, for one could not know the necessity of such a combination without having been graduated recently from the school of European housing!

But there is a delicate fraternal spirit in the statement which augurs well for the benefits to be conferred upon the profession through the abolition of the Institute's Canon of Ethics which once defined advertising as unprofessional. The whole article is permeated with a generous recognition of the loftiest professional attitude and glows with that modesty which the world so highly esteems.

In bespeaking the further consideration of this exemplar, by the Special Committee, we cannot refrain from adding one word more in respect to the advisability, in statements of this kind, of explaining that the houses have a tendency toward permanence. We know of no assurance by which the client is more likely to be gained.

While we are on this subject, to which we hope seldom to return, we invite our readers' attention to the illuminating article in the *Atlantic Monthly* for June, wherein is revealed the extensive and sinister operations of the German Government through the advertising agency of Haasenstein & Vogler. Of all the kinds of German serpents which the world has nourished in its bosom, none reveals itself with uglier fangs that this. But in reading this amazing revelation, we could not forget the architectural catalogue of a great American university, published recently and before the abolition of the Canon to which we have referred.

A study of the methods by which this catalogue was financed brings up the somber retrospect of architectural catalogues, yearbooks, programs, and other devices which have in the past been used to trick manufacturers into the support of a school, or a group of architects, or, in some cases, a single individual. When time and a clearer perception of the dishonesty of these methods have almost done the practice to death, it seems pathetic to find a great university still permitting its use.

"HAASENSTEIN & VOGLER"

Can the Special Committee on Advertising prepare a clause which will meet the approval of the Board of Directors and which will set such a lesson in manners and taste, if not in ethics, that the profession may be spared these public exhibitions and that the Department of Architecture of this university may be led to alter some of its ways? Can the Committee in some way inspire advertisers to look upon these appeals to their purse with the loathing which every decent man should feel for such methods. Are they not too intimately related to the method of Haasenstein & Vogler, advertising agents of his imperial highness, Kaiser Wilhelm II?

The Self-Owning Community Idea

MR. Leo Day Woodworth, secretary of the Advisory Council of Real Estate Interests of the city of New York, according to an article in the *Public Ledger* of Philadelphia, has put forward an analysis of the self-owning community idea which seems to deserve a passing attention. At least there are some among the friends of the principle who believe that it cannot be so flippantly dismissed as with a phrase such as this: "If the idea of the self-owning town is practical, that fact has not yet been shown. In short, when it is we will probably find an answer to the riddle of how one may lift himself with his boot-straps."

It is easy to imagine with what glee that phrase was turned off. If falls as trippingly from the pen as this: "One of the notions on which valuable space has been wasted recently seems to be that of 'self-owning' towns," or this: "Speculative profit is the reason for all human advancement." Of such are the generalities which indelibly brand the unscientific mind and the selfish advocate, although at a moment when the United States has embarked upon a cause which will require an expenditure greater than history has known and which holds out no hope of profit, one would think that men would be a little more careful in assigning profit as the source of all human advance.

However, let us recognize at once that Mr. Woodworth has feelings which have been hurt; that he admits that speculative profit is the law which has governed the question of land-development and house-building, and that in spite of the frightful, hideous, and death-dealing blight which it has sown relentlessly in all the towns and cities of our land, and even in the tinier communities and the far-away places, impeding and even strangling that industrial activity on which so much now depends (ask the investigators for the new housing departments of our war administration), he desires very much to see the system continued. We imagine that it will be, and for some time to come. The self-owning town has only appeared on the horizon, but it is an idea which has come to stay. Its progress will be as slow as the banishment of piracy from the seas, or slavery from America, or hanging people for debt, or burying live men under the four corner-posts of the king's house. On its journey it will be often ambushed and left for dead because of such generalities as we have chronicled, but, like other things which are for the good of all men and not for the good of the few, this idea will revive and will arise, and will some day prevail, for it is founded upon the principle of justice!

The Competition for a Solution of the House Problem

The detailed announcement of this competition, for which $2,000 is offered in prizes, appeared in the May number of the Journal. The complete program has now been printed, and will be mailed on receipt of request.

Professional Ferment*

NOTE.—We reprint the following article as perhaps the best analysis which has yet come to our attention, although many have essayed the task. The reasons which it cites as to the futility of the conference from which the Institute withdrew offer an admirable support—had such support been necessary—to the action of the Institute in the withdrawal which the writer did not anticipate.

The article contains so much that is true that we regret the greater good it might have done had it been written more carefully. Generalizations are always a poor means to an end, and while there are far too many architects who are guilty of that professional attitude which Mr. Comstock so justly condemns, there are far too many who have a higher perception of their duties and responsibilities to warrant their inclusion in so sweeping a statement. They will resent that condemnation, and with justice.

As to the really great questions which the profession of architecture is facing now and will face to an even greater extent after the war, we believe that the new Committee on Reconstruction, now in the making, will be the best answer which the Institute can make to those who have offered their many opinions as to what ought to be done but who have, in most cases, so signally failed to grasp the full scope of the problem.

There are, even in this day and hour, architects who have business of considerable volume on their boards, and many of our contractors can hardly be said to be starving for lack of work. Yet the architects as a body, and with them many in the construction industries, view the present situation with concern, and well they may.

Building construction methods are in a period of mutation; new species bid fair to be created, and the old order is on the wane. Not that this condition is a sudden development—as some may think—for the odor of it has been in the air for many moons. Building conditions, like a huge structure founded in a quagmire, have courted disaster until, with a precipitation of an earthquake, they are now suddenly engulfed, and the architectural profession, with many of its satellites, finds itself floundering—and wondering why.

The world war is the immediate cause of this cataclysm, and, as usual, the immediate cause receives the blame though the structure has long been showing dangerous settlement cracks caused by the improper foundations laid down in the past. Good foundations are a necessity in all good building, and the architect knows this better than anyone else, yet in his very life-work has he neglected the preachments he has made to others.

With lofty thoughts and stilted ethics he has strode along without an appreciation of the progress about him, ever changing, searching, specializing. Business—life—is a continuous revolution. New precepts rule to be superseded by even other newer precepts. The professional practice of architecture has not kept pace and is therefore doomed. It must be reborn from the ashes of the past, even as the legendary phœnix.

Art—architecture is the culmination of all arts—is undying. Architecture is inherent in the human race; the desire for it cannot be destroyed, and it will rise with a spirit of victory above all sordidness. This idealism is immortal. It is the soul of the phœnix which shall inspire the new body of a rejuvenated professional practice.

All have not been blind. Some—many even—have seen the light and remodeled their course to meet the modern trend. These are the successful architects and busy builders of today who have met the demands of current development and from them won a deserved return. Chance or accident has not been an element in their progress which has been based on the sound business principle of true service rendered for value received.

The famed architects of antiquity were master builders. They designed freely and wrought wonderfully with the clay in their hands. They lived in the heyday of the artisan and craftsman; they were the leaders who rose above their fellows by the sheer might of their gifted prowess. Times have changed.

This is the age of standardization, machine-made quantity production, rule by the multitude not by the few, and yet our art lives on and reaches ever higher levels of attainment. Let our architects read the signs of the times and rise to new pinnacles based on our modern productiveness.

When our country went to war there was a sudden and enormous demand for construction on a vast scale: the Quartermaster's Corps of the Army had to provide housing for the new armies; extensive additions were necessary to existing manufacturing plants, and even greater new factories were built over night as it were; office and executive buildings of great extent were demanded to house the ever-extending executive departments of the Government; housing for operatives became a crying need in our great industrial centers; construction on a vast scale was necessary to meet the needs of our colossal new war machine, to build our ships, and supply the materials of war.

To make possible this accomplishment, in all its ramifications vast to the extent of being almost incomprehensible, the organization of our Government Departments was extended manyfold; the personnel increased with a rapidity which was marvelous, and an organization of professional talent created which today, after a year of war, is perfected and efficient in a remarkable degree. What is the status of this organization? How is it made up? And how was it possible for the Government in its hour of need to immediately get assistance?

It was the trained engineers of the country who became the technical advisers of the Government on planning, design and construction, utilization of existing facilities to the utmost, expansion of them and creation of new utilities. It was our trained engineers, already well organized in our great building construction firms into harmonious working

*William Phillips Comstock, in *Architecture and Building*, April, 1918.

units, companies, even regiments, who were ready in the hour of need to do the deed.

Professionally as such, our architects have not been a factor in the greatest building emergency the country ever saw. Individually, to many the greatest praise is due. They have donned the uniform, striven at home and fought abroad, and given of their best in ability, effort, and resourcefulness. But as a profession, in the oft-vaunted position of autocrats of the building industry, they have been wanting. And the reason is not beyond discernment; it is an inheritance from the past; architectural practice has not kept pace with the times.

The call just issued by the American Institute of Architects to a conference seems like an effort to jump the back platform of the speeding express, as far as lending assistance to the Government is concerned. The United States Government now has an organization of building, of industry, of men, the unity of which is now evidenced. The mailed fist of this giant body is extended abroad, and its effectiveness causes confusion in the councils of our enemies.

Belated is the effort of the Institute; a year ago organized effort would have been of timely assistance to our Government, but others have done the work and now our industries are federated, our construction forces coördinated in competent hands. New construction proceeds with precision and expedition, and the enlargement of our cantonments to house our increasing armies will be accomplished with even greater efficiency than was displayed in their original construction.

The need of federation in the building industry as a wartime need has been met. Why not face the truth squarely and hold a conference to reorganize the outworn system of professional practice?

The after-war period in the building industry will be a time of great enterprise and expansion. In this the architect should play a prominent part, but his days of autocracy are over, and his success will depend on his ability to coöperate, not to dictate. Now, when the architect secures a job, he calls on the foundation builder to figure his footings, he depends on the steel contractor to design the structural members, he depends on the plumbing contractor to draw up his plumbing layout, he expects the electrical contractor—but why go on?—and when the building is finished he zealously, often belligerently, demands exclusive credit for its entire design and construction.

The day for this is past—and why? The architect has been losing business. Others who build better, more efficiently, and more economically under the name of architectural or engineering contracting firms have taken the work from him, and they work on the principle of coöperation, not autocracy.

Let us hope that the conference called by the American Institute of Architects, to be held at the Engineering Society's Building, New York City, at 10 A.M. on June 14, 1918, will be largely attended, but that there may be those present, with chastened spirits if you will, who will have the foresight and the courage to tell the truth and lead the great and ennobling practice of architecture on to better things.

Signs of Change

A DEPARTMENT DEVOTED TO THE FUTURE OF THE BUILDING INDUSTRY

SULLIVAN W. JONES, *Associate Editor*

The New Combination

"Today the Government is requiring industrial combination which yesterday it forbade as illegal." That remark is now heard so frequently, accompanied always by the smile that says, "The Government must admit it was wrong and that industry was right," that we feel some measure of justification for pointing out that the purpose of combination makes all the difference in the world—the difference between legality and illegality—the difference between public approval and public condemnation. The fundamental question of right and wrong does not arise from the act of combination, but from the object in view. If the object is to subserve public interest, combination is both desirable and may be made legal. If the object is to subserve private interest, to accomplish selfish ends, then combination becomes conspiracy. And what is true of combinations of producers is likewise true of combinations of consumers.

The progressive coöperative organization of industry we are now witnessing is combination, with precisely the same physical characteristics as the famous "Wire Pool," but we now call it coördination and think it altogether splendid and patriotic. Our attitude has changed with the purpose of the combination. The nation is now a party to transactions and agreements formerly conducted and made behind closed doors. For the first time in the industrial history of the world, producers and consumers, on a national scale, realize that there exists between them an indissoluble partnership; that their interests are identical and their functions reciprocal.

What the War Has Shown in Industry

The war has revealed this relationship by furnishing us a common cause, demanding common loyalty. A national and international unity of interest has developed, which must be fostered and treasured for it is the root and stem of true democracy. The exigencies of the present position have forced industrial coördination as a measure for attaining war efficiency. After the last chapter of the history of the war has been written, and the book closed, we must not turn back to the old conditions. The need for industrial efficiency will be as great, if not greater, after the war as now. How are we to find strength to carry the burden the war is placing upon us, and to reduce that burden, except through a studied economy of effort and resources, and the elimination of unnecessary, wasteful competition?

Men who were competitors before the war have been obliged to join hands, exchange surplus stocks of raw materials, and to agree upon uniform prices in order that the Government's needs might be met. Industries in which competitors have been unable to compose their differences of the past, and to agree upon a policy of sacrificing private to public interests, have been commandeered by the Government; and where the commandeer has failed to produce the necessary results, the extreme measure of Government control has been applied without hesitancy. A parallel study of the Government's procedure in the present emergency, and of the pre-war progress in industrial organization, discloses the liberalizing effect and constructive power of association in the affairs of men. Those industries in which the greatest progress has been made in organization, have found it possible to meet the demands of the present situation with the greatest ease and the least disturbance.

The Electrical Industry

The electrical industry furnishes a splendid example of efficiency and the mobility of productive power resulting from coöperative organization, even though the industry is perhaps over-organized. There are in it some associations and organizations whose activities duplicate in part the activities of other groups. There are also some organizations of questionable usefulness from the economic standpoint. But the wheels of progress are constantly in motion, and the tendency is always in the direction of simplification and consolidation. Those who have studied the development of organization in the electrical industry, hold the view that the time is not far distant when the activities of the entire industry will be coördinated through one central organization.

The founders of the electrical industry were scientists. They became competitors, but nevertheless remained scientists, and applied scientific principles to the conduct of their affairs. There always has been in the industry a free exchange of information on discovery and development, with the result that it has grown with amazing rapidity. It has assumed the leadership in research and the advancement of science. The scientific habit of mind is contagious, and we have in the electrical industry today, publicity and an exchange of opinions and ideas on matters both commercial and scientific, to an extent unknown in other industries. The electrical industry stands alone in progress on the standardization of products. And the establishment of these standards is the result of coöperative effort involving every element and phase of the industry, on both the production and consumption sides of the market.

Organization and Coöperation

The manufacturers of electrical apparatus and supplies are fully organized in every branch of production. The agencies through which the manufacturer's product is distributed and passes into service—the jobber or resale agent, and the contractor—are also completely organized. The interests and activities of these two groups of organizations are coördinated through central organizations. The consumers of electrical products are likewise organized, as in such professional societies as the National Fire-Protection Association, the National Board of Fire Underwriters, and in such vocational groups as the Association of Electrical Railway Engineers and the Association of Iron and Steel Electrical Engineers. And, again, there is coöperation between these organizations of consumers and the organizations of manufacturers and distributors.

Cost Accounting

Coöperation among producers in the work of standardizing has led directly to a study of costs and systems of cost accounting. The advantage to an industry of a uniform cost-accounting system cannot be measured in dollars and cents. Such a system is a business barometer. The Ministry of Munitions in Great Britain installed a uniform cost-accounting system in all of the industries furnishing war munitions. The costs were reported weekly and closely followed. When one factory showed a reduction in the cost of manufacture, an investigation immediately took place to determine how the reduction was effected; and if it did not tend to lower standards, a similar change in process or method was made in other plants producing the same thing. It is one of the answers to England's enormous production of war necessities.

Exchange of Ideas

But before proceeding to a description of the organizations in the electrical industry and their functions, let us, by a single example, show how the exchange of ideas and of data on processes and costs has aided industry in meeting the Government's war needs. Shortly after this country entered the war, the Government found it required a million feet of lead-covered cable. The members of the wire and cable section of the Associated Manufacturers of Electrical Supplies, twenty-three of them, went to Washington. The Government wanted immediate delivery. No one, or two, or three of the manufacturers could have filled the order in a year. On considering the matter collectively, they decided that, by coöperating, the industry as a whole could fill the order within the time set. This group of manufacturers appointed a committee of three to represent them in the transaction, took the order, exchanged surplus stocks of materials, agreed upon a price which was considerably less than that for which any one manufacturer could have filled the order, started delivery in two weeks, and completed the order in sixty days. Team work! A demonstration of the efficiency that comes from coöperation.

Producers and Consumers

A picture of the organization in the electrical industry can be most simply presented if the participants in the industry are divided into two general groups with respect to their connections and interests, namely, producers and consumers. The organizations of the insurance companies, the Government bureaus and the organizations having charge of the preparation and promulgation of codes for fire-prevention and public safety, are classed as consumers' organizations, because, in theory, their function is that of safeguarding public interests. They are not, of course, wholly organizations of consumers, and they function, in reality, as the instruments of coöperation between the consuming and producing classes. Contractors are classed

as producers, for their interests are more closely identified with those of the manufacturer than with those of the ultimate consumer, and there is a growing tendency in the industry to constitute the contractor a resale agent for the manufacturer. On the other hand, such a conception of the contractor's status does not fit with the theory that he ought to act as the agent of the consumer, his client or customer. This confusion merely accents the point already made, that the interests of producer and consumer are identical, and that they do not stand on opposite sides of the fence with conflicting interests and objects. That conception of the relationship between the two parties to commercial transactions has died of its war-inflicted wounds.

Evolution in Objective

The objects of the earlier organizations of producers, as stated in their constitutions, usually included a declaration like this: "Its object shall be to advance and protect the interests of the manufacturers of . . ." Later we find the broader understanding expressing itself in such statements of objects as these: "To assist in standardizing and marketing high-grade electrical products," and "To reduce the fire-hazard and to improve the quality of electrical goods," and again, "To coöperate with the National Fire-Protection Association, the American Institute of Electrical Engineers, and the American Institute of Architects, to improve the quality of electrical material and its installation, to facilitate the solution of all electrical engineering problems, and to improve electrical specifications." The leaven is working. We may face the future with confidence.

Producers' Organizations

The organizations among producers arrange themselves with respect to their importance in the following order:

The Electrical Manufacturers' Council.
The Electrical Manufacturers' Club.
The Electric Power Club.
The National Electric Light Association.
The Associated Manufacturers of Electrical Supplies.
The Rubber-Covered Wire Engineers' Society.
The Electrical Supply Jobbers' Association.
The Conference Club.
The National Association of Electrical Contractors and Dealers.

There are many other producers' organizations of a more general character, and with less clearly defined objects; for example, The Jovian Order, which is a social organization with a very large membership, comprising manufacturers, dealers, contractors, salesmen, and advertising men. Another is the Society of Electrical Development. The latter may be best described as a publicity and propaganda bureau for manufacturers and central stations, the object of which is to increase the consumption of electric energy. Some of the largest central stations are not members of this society, and some of its manufacturer members regard its activities as superfluous. Its status is uncertain, and its usefulness is becoming questionable.

Consumers' Organizations

Among consumers there are the following organizations:

American Institute of Electrical Engineers.
Illuminating Engineering Society.
Association of Railway Electrical Engineers.
Association of Iron and Steel Electrical Engineers.
The National Fire-Protection Association.
The United States Bureau of Standards.
The National Board of Fire Underwriters, with its service adjunct—The Underwriters' Laboratories.
The Associated Factory Mutual Fire Insurance Companies.

Professional Societies

The professional societies and the producers' organizations all coöperate in the work of standardizing specification requirements and tests through the U. S. Bureau of Standards, National Fire Protection Association, and the two organizations of insurance companies. Similar cooperation takes place through the National Fire-Protection Association on the preparation and revision of the National Electric Code.

Producers' Organizations in Detail

To consider the producers' organizations a little more in detail, the Electrical Manufacturers' Council is composed of four members each, from the Electrical Manufacturers' Club, the Electric Power Club, and the Associated Manufacturers of Electrical Supplies. The Manufacturers' Council has committees on various subjects of general interest to producers in the industry, such as cost accounting. The Electrical Manufacturers' Club, the Electric Power Club, and the Associated Manufacturers of Electrical Supplies represent the interests involved in the entire line of products of the industry. The two first named concern themselves largely with matters of standardization in the design of electrical apparatus, such as motors, generators, etc.

The Rubber-Covered Wire Engineers' Society is composed of the experts from the wire manufacturers. They have rendered valuable service in revising the Code and in raising the standard of rubber insulation.

The Associated Manufacturers of Electrical Supplies is now divided into fourteen sections. Sections are created as the need arises. Each section is composed of interests producing classes of product. For example, there is a section on lamp receptacles and sockets, another on line material, another on panelboards and switchboards, another on wire and cable, another on porcelain. This association, through its committee work, coöperates with the National Fire Protection Association and the engineering societies and other organizations interested in the formulation of codes and the standardization of products. Some of its committee reports are extremely valuable documents. Among them may be mentioned "Standard Methods of Testing Molded Insulation," and the report on "Electric Wiring Systems—Concentric Wiring." There are many others, too numerous to mention here.

The National Electric Light Association concerns itself with every phase of the lighting industry and has a section for the consideration of each. It has a great many important committees, is represented on the Electric Committee of the National Fire Protection Association in charge of the electrical code. It publishes many extremely valuable handbooks and standards on electrical construction.

The Electrical Jobbers' Association has committees on code and on standardization which coöperate with the other organizations in the effort to standardize and market high-grade electrical products. At the last convention of

the Jobbers' Association its members were authorized to become members of the National Association of Electrical Contractors and Dealers. This authorization may prove to be the first step toward a consolidation of these two organizations.

The Conference Club is an association of interstate contracting electrical engineers. This organization has no constitution. Branches of the industry other than contracting are represented by associate members. Its objects are to further the interests of the whole industry. Its function is to initiate economic and ethical reform movements. The twelve members of the Advisory Board of the National Association of Electrical Contractors and Dealers are all members of the Conference Club.

The National Association of Electrical Contractors and Dealers has a large and rapidly increasing membership. It has numerous committees for coöperating with other organizations on the preparation of the electrical code, the establishment of standards, cost accounting, etc. It publishes monthly a magazine known as *The Electrical Contractor-Dealer*.

In addition to these producers' organizations, there are now four Institutes of Electrical Contractors, created to practise the "open price" method of business. They have done much toward improving conditions in the contracting business, and will eventually effect a radical change in the contractor's status.

Referring again to the consumer's organizations, the most important is the first named, The American Institute of Electrical Engineers. The Institute has technical committees whose work touches every part of the electrical field, including a committee on code and a committee on standards. The publications of the Institute, which include proceedings, transactions, standardization rules and separate papers and discussions, are of great value. The Illuminating Engineering Society concerns itself with gas illumination and daylight illumination, as well as electrical illumination. Its work is largely educational and includes the conduct of popular lectures on illumination with lantern slides, and the publication of many valuable works, among which the most noteworthy are the codes on school and factory lighting, theory and practice of illumination, etc. This society has a war-service committee which has made valuable recommendations to the Government on the illumination of hospitals, contonments, shipyards, and exterior detector illumination. The Association of Railway Electrical Engineers is composed of the electrical engineers in railroad organizations. The Association of Iron and Steel Electrical Engineers is composed of electrical engineers engaged in the iron and steel industry, and concerns itself with electricity as applied to that industry.

Other Activities

The picture of coöperation, publicity on industrial activities, and exchange of data in the electrical industry would not be complete without reference to the work of the General Electric Company's Research Laboratory, and the *General Electric Review*, and also to Westinghouse Electric & Mfg. Co.'s monthly publication of *The Electric Journal*. The *General Electric Review* is practically a bulletin describing the work of the General Electric Company's research laboratory. It is an important publication of a highly scientific character and of general circulation. *The Electric Journal*, published by the Westinghouse Electric & Mfg. Co., is of a more practical character than the *General Electric Review*. It deals with practical questions of the uses of electricity.

Very recently a movement has been started within the industry to form a joint conference committee of representatives of the manufacturers, the consulting electrical engineers, and the contractors, for the purpose of effecting, if possible, a re-distribution of engineering functions between the three groups represented. This movement will also make necessary the declaration and adoption of a policy by each of the three groups which will help to define its function in the industry.

News Notes

Notes from the University of Michigan

Summer Class in Draughting for Women

In view of the number of young men who are going into military service, the University of Michigan will offer a special course in tracing and elementary draughting for young women. This course will be given in the approaching Summer Session beginning on July 1, and will consist of eight weeks' intensive work, covering enough ground to enable young women to adapt themselves, on the one hand to the needs in architects' offices, and on the other in mechanical draughting.

Further information may be had regarding the first from Prof. Emil Lorch, College of Architecture; and regarding the second from Prof. H. J. Goulding, College of Engineering, University of Michigan, Ann Arbor.

Changes in Courses

In view of the conditions created by the war, some changes have been made in the regular architectural programs of the University of Michigan. The first of these is an increased requirement in scientific building construction, increasing work in this field beyond the heretofore normal requirement in architectural schools; the second consists in providing elective hours which will enable architectural students to pursue one of a number of special courses which prepare men for specific technical Government service.

A number of the architectural students are now completing the special course in ship-construction given by this University at the request of the Government. These men will thus be able to use their technical training in a most helpful way. The advanced students are just completing the planning of an industrial town, in which everything, from the plant and public buildings to the various housing types, is being worked out.

Architectural Exhibition

At the recent convention of the American Institute of Architects held in Philadelphia, a special exhibit was shown

of drawings by Wilson Eyre, a well-known architect. Practically the entire collection is now hung in the Alumni Memorial Building, Ann Arbor, and constitutes an unusually interesting set of drawings. There are more than one hundred of these, all of which were made by Mr. Eyre himself over a period of thirty years. They show the entire range of this versatile artist. Pen and ink, pencil, black and colored crayon, water-color, and a combination of these mediums are used, as well as papers of all colors ranging from a white Whatman to the tinted papers which Mr. Eyre knows so well how to use advantageously.

The Competition for a Solution of the House Problem

Among the numerous letters which have been received by the Journal since its announcement last month of a competition, with a first prize of $1,000 for the best solution of the house problem, none has pleased us more than that from which we quote the following:

"Your approach to this subject has such a sound sociological basis that, if the right students can only be engaged by the problem set before them by you, efficacious and beneficent results must follow. The physical plan without purpose or method will no longer exist in its airy Utopian solitude when all three requirements—architectural, social, and economic—are taken together. The timely perception of this fact would entitle you to congratulations even before the actual outcome of the contest had become evident."

New Post-Office Buildings and Additions

Under date of May 27, the Secretary of the Treasury submitted to Congress a letter making urgent appeal for an authorization to proceed with the plans for forty-five post-office projects. His recommendations are in each case based upon statements from the Post Office Department which reveal the necessities of the different offices. The request is for an authorization totaling about twelve million dollars, and includes projects for the following towns: Oak Park, Ill.; Altantic City, N. J.; Gloucester, Mass.; Lima, Ohio; Newark, N. J.; Waterbury, Conn.; Jamestown, N. Y.; Scranton, Pa.; Cumberland, Md.; Canton, Ohio; Warren, Ohio; Houlton, Maine; Findlay, Ohio; Wausau, Wis.; Butte, Mont.; Utica, N. Y.; Norfolk, Va.; Fargo, N. D.; Ithaca, N. Y.; Terre Haute, Ind.; Vincennes, Ind.; Norristown, Pa.; Erie, Pa.; Plattsburg, N. Y.; Washington, Pa.; Lowell, Mass.; Williamsport, Pa.; Savannah, Ga.; Lawrence, Kans.; Saginaw, Mich.; Alexandria, Va.; Manchester, N. H.; Hagerstown, Md.; Sioux City, Iowa; Sedalia, Mo.; Decatur, Ill.; Clarksburg, W. Va.; Macon, Ga.; Brownsville, Tex.; Wichita, Kans.; Astoria, Ore.; Columbia, Mo.; Zanesville, Ohio; Little Rock, Ark.; Reno, Nev.

In a letter to Congress from Acting Secretary of the Treasury Moyle, under date of April 12, 1918, it was recommended, among other things, that there be stricken from the appropriation for "General Expenses of Public Buildings, 1919," the item allowing $6,000. for an architectural designer. Perhaps in view of the subsequent request for the authorization referred to, Congress may see the advisability of retaining a competent designer. It manifestly is not in the public interest to attempt a retrenchment which may visibly affect the character of public buildings, even in wartime.

Unsigned Communications

We are very recently in receipt of a manuscript which bears no mark of identification whatever. The envelope is postmarked Newport, Ky. We are of course obliged to lay it aside, since we cannot give consideration to anonymous communications. If the sender's name was carelessly or thoughtlessly omitted, we hope that this notice may recall the manuscript to his mind.

Anti-Earthquake Construction

A committee of the Southern California Chapter, consisting of A. R. Walker and H. F. Withey, has coöperated with the committee from the Architects and Engineers Society in drafting a building ordinance for the cities of Hemet and San Jacinto—cities which recently suffered considerable damage by earthquake. The Joint Committee visited both cities and surveyed the conditions, after which the Committee worked upon the drafting of a building ordinance which, in its judgment, would provide a form of construction that would withstand earthquake shocks, as far as it is possible to do. This service was given in the name of the Southern California Chapter.

Obituary

Frank Miles Day

Elected to the Institute as a Fellow in 1895
President of the Institute 1906-1907
Died at Philadelphia, June 15, 1918

(Further notice later)

Mrs. Aimee Rotch Sargent

Honorary Member of the Boston Society of Architects

The Boston Society of Architects records its deep regret for the death of Mrs. Aimee Rotch Sargent, one of the heirs of Benjamin S. Rotch, to whom the profession is indebted for the founding and endowing of the Rotch Traveling Scholarship. She was an Honorary Member of the Boston Society of Architects, and a Member of the Rotch Traveling Corporation. She found time to maintain a constant interest in the work of the students who went abroad, and also followed their careers after returning to this country. She endeavored to keep in touch with the activities of the Society and of the profession. Although living at a distance from Boston, she has attended many meetings of the Society, and her influence and her help were always available for the many professional demands which were made upon her. She has enriched a busy and influential life by being ever ready to help in everything which touched humanity, and her name is cherished and honored wherever her influence has made itself manifest. She leaves behind her a record in which the profession may well feel an especial pride because of her close contact with one of the most potent factors in architectural education.
—*Resolution of the Boston Society of Architects.*

Letters* from an American Architectural Student in France

August 22, 1917.

I was called away while writing this letter and have been absent for several days. What days they were—never to be forgotten—the most wonderfully interesting I have ever had, far more so than any in the old sectors. And is it not funny that I had my first encounter with gas almost six hours after I wrote the first part of this letter—the old-fashioned chlorine gas? But it is all such a long story that I will devote a whole lengthy letter to it. I cannot express to you how much I owe to you for letting me come over here and thus enabling me to see the sights I have seen and do the work I have done.

I have to go back again shortly, and when things are going smoothly once more I will write you all about it. It has been wonderful. You see the French made quite an advance here, and we followed them up, so I have seen things that maybe few Americans have ever seen before—horrible sights and shells without cessation. I saw the whole business: *tir de barrage*, first prisoners, trenches, and even what was No Man's Land several hours before. I am going to take back lots of things I have said. I have seen some mighty fine Germans, worked with them, and talked much with them, at one time acting as interpreter for the French. Think of that! Most of them came from Baden, all between the ages of seventeen and twenty-three or forty and forty-five. Some were greatly interested to hear I had been to Heidelberg and gave me lots of local news.

Also, you should see the way the French treated the Germans—simply unbelievable—after what the Germans have done. They tried to outdo each other to be nice to them. There were many, many prisoners and souvenirs galore, but I did not have time to collect anything except a few buttons which one young Boche gave me.

August 23, 1917.

I had a beautiful letter planned—but "there's many a slip"—all about all sorts of things: foreign troops and the foreign Legion, of which I have seen something lately; about the trench and dugout which we built, and how we had at one time, more or less to take refuge in it; all about German aëroplanes and French *saucisses*; about the personnel of the American Ambulance; the Paris Service; French Canadians, and innumerable other things. Especially about the old *tirage* in the town, in the cellar of the house of M. N., a dealer in real estate and forests, and of our quarters in his best parlor, with the gilded carvings on the walls, the shell-holes in the roof, and of the rats that ran across our faces by night and the fleas that swarmed over and about our bodies as we slept on his hardwood floor; about the *brancardiérs* there who used to have hot tea ready for us on cold nights and, occasionally, baked apples; and a hearty priest who had a farm somewhere whence came fresh butter, with which he was most liberal; and much about the new *tirage* in the suburbs of the town—a most beautiful place—formerly a seminary, quite old and fascinating. There is a wall surrounding the place on all sides, which is penetrated on the north by a forbidding gate, and you pass through this and down a slight slope, past orderly vegetable-gardens, down into a little court enclosed on three sides by the seminary, one wing having been a chapel, formerly tenanted by priests, acolytes, and worshipers, but now desecrated by sacrilegious American Ambulanciers who cook hot chocolate on the chancel step and have their equipment in the altar precincts. The other wing is now used as the main sorting-room, morgue, and for other necessaries for a *tirage*. Then there is the main part, with its steep purple roof and the little cupola with a clock that has long since ceased to run; and you walk into a wide door surmounted by a coat of arms, and through a hall out into a great broad lane, at the back of which is a long oblong man-made lake, bordered by shade trees, under the center of whose line there stands a little summer-house, sheltering a weather-beaten statue of the Virgin; and there are swings, horizontal bars, shinny poles, and many other before-the-war appliances scattered about.

But now the weeds have grown up all about these, and the *poilus* wash their clothes in the lake and dry them on the summer-house. There are two enormous white tents, one filled with benches for sitting cases, and the other with beds—100 of them—all ready. And beside one of the tents is a great red cross done in tiles, on a ground of white gravel, for the benefit of German aviators. It has been of some assistance to them, for the other day when we were waiting around—"whiz bang," a German shell came hurling in and tore a great ugly black hole in the white ground.

This may have been a mistake on their part, but, nevertheless, the night before last the Boche flew over one of the large evacuation hospitals near here, dropped bombs on it, and destroyed three wards, burning alive forty *grandes blessés* who were confined to their cots. This sounds too horrible to be true, as there was no military advantage gained thereby—no possible excuse—but it happened to one of the hospitals where we carry men, and I saw it afterward.

Well, the long-waited-for offensive has come at last, and I have had the rare privilege of seeing it as few others have, so my story is a long one. A whole life-time was crowded into twenty-four hours, during which I saw much of hell, something of heaven, and a very great deal of human nature. It still goes on, but so far we have been lucky; three wounded—two very slightly, one not seriously; but, unfortunately, our French corporal is dying at the present moment, poor fellow, but that happened last night, and I am overrunning myself.

On a glorious Sunday afternoon, another fellow and myself walked down to S. S. U. 18's camp, to pay a friendly visit. I saw Billy W. there, and, after leaving him and his section, we started back over the hills, about a three-mile walk. Our journey took us up to the top of a fairly high point—from where we could get a splendid view of the lines—the places which figured in the great French advance of August 20. Oh! it was a unique sight—the broad brown front, all tied up with trenches everywhere, with the fountains of earth and smoke rising and falling, leaving a nasty sickly looking cloud hovering above. In one part there appeared to issue from the ground a whitish yellow jet which shot along the ground, causing a cloud of dense black smoke. Of course, we were too far away to be sure, but I believe that we saw liquid fire.

*The letters of Edmund Randolph Purves, continued from the May number.

Structural Service Department

D. KNICKERBACKER BOYD, *Associate Editor*

In connection with professional societies, organized bodies, and the following Committees of the Institute, working toward improvements in building materials and methods, and higher ideals in the sheltering of humanity:

BASIC BUILDING CODE — CONTRACTS AND SPECIFICATIONS — FIRE-PREVENTION
MATERIALS AND METHODS — QUANTITY SYSTEM

The personnel of these Committees for the ensuing year will appear next month, together with that of the new
COMMITTEE ON STRUCTURAL SERVICE
(concerning creation of which see 5B1)

ELECTRICAL ISSUE

SERIAL NO. 6, JUNE, 1918

INDEX TO SUBJECTS TREATED IN THIS ISSUE

(For index of materials previously treated, see Index on page 321 and General Index to the Structural Service Book, Vol. I, 1917)

Electrical Societies, Associations, and Allied Interests 6A
The National Electrical Code 6B
The National Electrical Safety Code 6C
Electricity Within and Around Buildings . . . 6D
Service, Installations, Apparatus and Appliances in General 6D
Information Obtainable and General Activities 6D
Standards Adopted or Recommended and Procedure to be Followed 6D
Standard Symbols and Charts 6D
Electric Elevators and Dumbwaiters 6E
Telephones, Signaling Systems, Bells and Clocks 6F
Heating, Cooking, and Other Appliances and Devices 6G
Vacuum Cleaners 6H
Illumination, Lighting Fixtures and Lamps . . 6J
Lightning Protection 6K
Electrolysis 6L

Electrical Societies, Associations, and Allied Interests 6A

In lieu of presenting descriptions of the various bodies which are actively concerned with matters of electrical interest structurally, we are fortunate to be able to refer this month to the **complete review** by Sullivan W. Jones of the **present status of co-operation** in the entire **electrical industry.**

This is printed on pages 307–310 under SIGNS OF CHANGE in this issue. More detailed descriptions of some of these organizations may be found in the *Structural Service Book*, Vol. I, under 6A and 6B, the publications and coincident activities only being listed in this Section as follows, and referred to under appropriate subsequent divisions.

Governmental Activities and Publications. 6A1

These will be found described under appropriate subdivisions in this issue, particularly under the Section entitled "ELECTRICITY WITHIN AND AROUND BUILDINGS," *Information Obtainable*, and *General Activities* (6E1*a*), *Standards Adopted or Recommended and Procedure to be Followed* (6E1*b*).

American Institute of Electrical Engineers. 6A2

Secretary: F. L. Hutchinson, 33 W. 39th Street, New York City.

Publications and Standardization Rules:

(*a*) **Proceedings.** Published monthly, in two sections. One contains news and notices of interest to members, the other contains technical papers, reports of committees and other matters of an engineering character. $10 annually.

(*b*) **Transactions.** Published annually, containing selected technical papers, discussions, and reports, and forming a permanent record of the progress of electrical engineering. Bound volumes to non-members, $10 in paper, $11.50 in cloth.

(*c*) **Separate Papers and Discussions.** Most of those in the Proceedings and Transactions can be furnished at 50 cents each.

(*d*) **Yearbook.** Contains catalogue and directory of membership, constitution and by-laws, and general information regarding the Institute. $1.

(*e*) **Standardization Rules.** These are formulated by the Standards Committee whose purpose is to standardize electrical nomenclature, the classification of electrical machinery and apparatus, methods of rating and specifications for testing, with special reference to acceptance tests. See (6D1*b*11) for further reference to these Standardization Rules and to *International Standardization*.

Illuminating Engineering Society. 6A3

(Publications and Activities will be referred to in next succeeding Serial Number.)

Institute of Lighting Fixture Manufacturers. 6A4

Secretary: Rudolph Appel, 103 Park Avenue, New York City.

(Publications and activities will be referred to in the next succeeding Serial Number.)

National Electric Light Association. 6A5

Secretary: T. C. Martin, 29 West 39th Street, New York City.

Publications:

(*a*) Proceedings, and (*b*) Reports, issued annually.

(*c*) The N.E.L.A. Bulletin, issued monthly, for members and for distribution to institutions to be accessible to engineering students.

(*d*) Handbooks, permanently valuable contributions to the literature of electricity, have received wide appreciation, not only from public utility companies and their employees, but from professors and students in colleges and technical schools.

(*e*) Booklets, issued from time to time through the Commercial Section, for promoting better conditions of service to the public.

(*f*) Many other publications chiefly resulting from the activities of about seventy committees, with some 500 able representatives in their membership, are also issued. Some of these will be found referred to under the various subdivisions.

The Society for Electrical Development. 6A6

General Manager: J. M. Wakeman, 29 West 39th Street, New York City.

Public Information:

Issues no publications for general distribution, with the exception of a reprint of **"Useful Electrical Information for Architects, Contractors, and Engineers,"** which is referred to under 6D1*a*40.

The Society has coöperated with the Wiring Committee of the National Electric Light Association and with H. C. Cushing in preparing a special section of over fifty pages on **"House Wiring"** in the *"Cushing Standard Wiring Handbook."*

National Association of Electrical Contractors and Dealers. 6A7

(Organized 1901 under the name *National Electrical Contractors' Association of the U. S.* Name changed in 1918.)

Secretary: Harry C. Brown, 110 West 40th Street, New York City.

Publications:

(*a*) **Standard Symbols for Wiring Plans**, as described under 6D1*c*1.
(*b*) **Standard Conduit Charts**, as described under 6D1*c*2.
(*c*) **"Electrical Contractor Dealer,"** the official journal, covers a wide field in the electrical industry and reviews the activities of the twenty-one committees in charge of as many subjects, among them being: Industrial Development, House-wiring, Merchandising, Central Stations, Architects, Engineers, Standardization, Statistics.

Associated Manufacturers of Electrical Supplies. 6A8

General Secretary: C. E. Dustin, 30 East 42d Street, New York City.

Publications, Committee Reports:

The activities of this Association, through its sections and committees, are recorded by means of reports, some of which are referred to in SIGNS OF CHANGE and may be obtained upon application to the General Secretary.

Electrical Manufacturers' Council. 6A9

Electrical Manufacturers' Club. 6A10

Secretary: Shiras Morris, Hartford, Conn.

Electric Power Club. 6A11

Secretary: C. H. Roth, 1410 West Adams Street, Chicago.

The Conference Club. 6A12

Secretary: Sullivan W. Jones, 728 Seventeenth Street, N.W., Washington, D. C.

National organizations, with important functions electrically, are:

National Fire-Protection Association. 6A13

Secretary of Electrical Committee: Ralph Sweetland, 141 Milk St., Boston.

Among the many activities of this Association (described under 5A3) the most important electrically is the work of compiling the **National Electrical Code**, the biennial revision of which is in the hands of the Electrical Committee. The contemplated 1917 revision did not take place for reasons stated in the *Structural Service Book*, Vol I, under 6A9.

As reported to the annual meeting in May, 1918, the Electrical Committee had held its meeting and made amendments to the Code, the new draft of which had been accepted by the executives of the N.F.P.A. and passed to the National Board of Fire Underwriters for printing.

The National Board of Fire Underwriters. 6A14

Publications: The June, 1918, edition of the **National Electrical Code** (187 pp. and index), is now on the press and is promised for delivery this month.

Some other publications of the N.B.F.U. pertaining to electricity are referred to under the various appropriate subdivisions. For description of the Board, see 5A4.

Local Underwriters' Associations. 6A15

For description of these and of map showing jurisdictions, see 5A5.

Underwriters' Laboratories, Electrical Department. 6A16

Publications and Electrical Standards:

These will be found referred to under the various appropriate subdivisions in this issue, a complete list being given under 6D1*b*9.

The Associated Manufacturers of Electrical Supplies, through section committees, coöperates with the staff of the Underwriters' Laboratories in establishing **Industry Conferences** and in joint preparation and review of the Laboratories' several **Standards** before promulgation. It is believed that the coöperation at present being had from the various sections, and from the Association proper, represent distinctly beneficial advance in securing uniform practices in the industry.

For descriptions of activities and other publications of the Underwriters' Laboratories see 1A4*a*, 5A4*a*, and 5K1. Also for further and more detailed information in this issue, including illustration of Electrical Laboratory of the New York Testing Station, see Industrial Section, page v.

Associated Factory Mutual Fire Insurance Companies, Inspection Department and Laboratories. 6A17

For list of publications and descriptions, see Serial 5A6, 5A6*a*, and 5K4. For the two publications especially relating to electrical subjects, see *Standards Adopted or Recommended and Procedure to be Followed* (6D1*b*10). Of these the "Electric Rules," which is the National Electrical Code illustrated by cuts and with explanatory footnotes, has been adopted as a textbook in several educational institutions throughout the country.

The Associated Factory Mutual Fire Insurance Companies are represented on the Electrical Committee of the N.F.P.A.

American Federation of Labor—Building Trades Department. 6A18

Secretary: Wm. J. Spencer, A.F. of L. Building, Washington, D. C.

In addition to the **Building Trades Councils** in the various states, nineteen **Internationals** comprise the **Building Trades Department**, of which those especially interested in electrical matter are:

(*a*) *International Brotherhood of Electrical Workers.*

Secretary: C. P. Ford, Reisch Building, Springfield, Ill.

This Brotherhood has, as noted in Report of Bureau of Standards, coöperated in the preparation of the National Electrical Safety Code.

(*b*) *International Union of Elevator Constructors.*

Secretary: F. J. Schneider, Perry Building, Philadelphia, Pa.

Still other Associations interested in the matter of electrical installations in connection with building construction, are:

The Elevator Manufacturers' Association of the U. S. 6A19

Committee on Uniform Elevator Regulations. Chairman, M. B. McLauthlin, Boston.

Society of Motion Picture Engineers. 6A20

Secretary: E. Kendall Gillett, 729 Seventh Avenue, New York City.

National Association of the Motion Picture Industry. 6A21

Executive Secretary: F. H. Elliott, Times Building, New York City.

The International Association of Industrial Accident Boards. 6A22

Secretary-Treasurer: Royal Meeker, Mills Building, Washington, D. C.

International Association of Municipal Electricians. 6A23

Secretary: C. R. George, Houston, Tex.

Western Association of Electrical Inspectors. 6A24

Secretary: W. S. Boyd, 175 Jackson Building, Chicago.

American Electric Railway Association. 6A25

Secretary: E. B. Burritt, 8 W. Fortieth Street, New York City.

Association of Iron and Steel Electrical Engineers. **6A26**
Secretary: J. F. Kelly, McKeesport, Pa.

Association of Railway Electrical Engineers. **6A27**
Chicago, Ill.

Canadian Electrical Association. **6A28**
Secretary-Treasurer: M. C. Gilman, Toronto, Canada.

Electrical Supply Jobbers' Association. **6A29**
General Secretary: F. Overbagh, 411 S. Clinton Street, Chicago, Ill.

Jovian Order. **6A30**
Secretary: E. C. Bennett, Syndicate Trust Building, St. Louis, Mo.

National Association of Electrical Inspectors. **6A31**
Secretary-Treasurer: W. L. Smith, Concord, Mass.

Institutes of Electrical Contractors. **6A32**
In four cities: New York, Boston, Chicago, and Baltimore.

Rubber-Covered Wire Engineers' Association. **6A33**

Other national associations concerned with the use of electricity in buildings are:

American Society for Testing Materials (1A5c), *American Railway Engineering Association* (1A2c), *American Society of Mechanical Engineers*, *American Society of Consulting Engineers* (1A2e), *Western Society of Engineers*, with headquarters at Chicago, maintains an *Electrical Section* administered by an Executive Committee.

In connection with research work in electricity and testing facilities in educational instutitions, see 1A1.

The National Electrical Code **6B**

The evolution of the Code will be found described in the *Structural Service Book*, Vol. I, under 6C. The Code, as a general standard, is herein referred to under 6D1b1, and the Sections applicable to specific instances are referred to under the respective subdivisions.

As mentioned under 6A13, the continual study of the Code and its biennial revision is now under the jurisdiction of the Electrical Committee of the National Fire Protection Association.

Copies of the Code may be obtained from the National Fire Protection Association, the National Board of Fire Underwriters, the Underwriters' Laboratories, the Associated Factory Mutual Fire Insurance Companies and from all local underwriters' associations or inspection departments. The Code is also printed in full, with illustrations and explanatory notes, in "The Electrical Blue Book."

The Code is divided into six sections under the designations Class A, B, C, D, E, and F, as listed below. The reader is referred to the Code itself for all detailed descriptions, except the General Suggestions which are here printed in full for the recommendations which they contain.

National Electrical Code—General Suggestions (quoted from the June, 1918, edition). **6B1**

"The following general suggestions, as well as the fine print notes in the rules, are simply suggestions and explanations and are in no case to be considered by inspection departments as mandatory.

"In all electric work, conductors, however well insulated, should always be treated as bare to the end that under no conditions, existing or likely to exist, can a ground or short circuit occur, and so that all leakage from conductor to conductor or between conductor and ground may be reduced to the minimum.

"In all wiring special attention must be paid to the mechanical execution of the work. Careful and neat running, connecting, soldering, taping of conductors, and securing and attaching of fittings are specially conducive to security and efficiency, and will be strongly insisted on.

"In laying out an installation, except for constant current systems, every reasonable effort should be made to secure distribution centers located in easily accessible places, at which points the cutouts and switches controlling the several branch circuits can be grouped for convenience and safety of operation. The load should be divided as evenly as possible among the branches, and all complicated and unnecessary wiring avoided.

"The use of wire-ways for rendering concealed wiring permanently accessible is most heartily endorsed and recommended; and this method of accessible concealed construction is advised for general use.

"Architects are urged, when drawing plans and specifications, to make provision for the channeling and pocketing of buildings for electric light or power wires, and also for telephone, district messenger, and other signaling system wiring."

The Sections of the Code. **6B2**

Class A, *Generators, Motors, Switchboards, etc.:* (Includes electrical equipment of **Central Stations, Dynamo, Motor** and **Storage-Battery Rooms, Transformer Substations**, etc. Rules 1 to 11.)

Class B, *Outside Work:* (Not including wiring for Light, Power and Heat, Protected by Service Cutout and Switch. For Signaling Systems, see Class E.) All systems and voltages. (Rules 12 to 15.)

Class C, *Inside Work:* (Including all work for **Light, Power** and **Heat, Protected by Service Cutout and Switch.** For Signaling Systems, see Class E.) General Rules, all systems and voltages. (Rules 16 to 19.) Constant-Current Systems. (Rules 20 to 22.) Constant-Potential Systems; General Rules, all voltages. (Rules 23 to 25.) Low-Potential Systems, 550 volts or less. (Rules 26 to 43.) High-Potential Systems, 550 to 3,500 volts. (Rules 44 to 46.) Extra-High-Potential Systems, over 3,500 volts. (Rules 47 to 48.)

Class D, *Fittings and Materials:* All systems and voltages. (Rules 49 to 84.) This section of the Code describes the **general characteristics of fittings and materials** of the types **commonly employed in electrical equipments** for the installation of which regulations are given in Classes A, B, C, E, and F. It is intended as a guide to the classification and identification of types, sizes, ratings, and uses of fittings and materials, together with such information and regulations as are applicable to all electrical devices, and such requirements for details of construction or specifications for tests as are included in this class are given as descriptive information and not as a complete basis for judgment of devices. All fittings and materials should be submitted for examination and test before being introduced for use.

Class E, *Miscellaneous.* (Rules 85 to 89.)

Class F, *Marine Work.* (Rules 90 to 99.)

The National Electrical Safety Code **6C**

The U. S. Bureau of Standards has been engaged for over four years in a study of the life-hazard in electrical practice and in the preparation of this Code.

1. *Circular No. 54, Second Edition, Nov. 15, 1916*, presents the completed text under the title: **"National Electrical Safety Code for Examination, Trial and Constructive Criticism."** Copies of this circular, which was briefly described in the Structural Service Book, Vol.I, under 6D1, may be procured from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 20 cents for paper-bound, 30 cents for cloth-bound. This circular is now in process of revision, but the new edition will not be ready for some time.

2. Under 6D1 was also printed, last year, extracts from a letter from Dr. E. B. Rosa of the Bureau of Standards, stating that the Bureau would be glad to have the expressed approval of the American Institute of Architects with respect to the general character of the Code, etc.

This resulted in the Board of Directors of the Institute referring the matter to its Committee on Materials and Methods. This, among other subjects, was communicated to all Chapter subcommittees and resulted in the Committee submitting the following resolution in its report to the annual convention of the Institute, in Philadelphia, April 24 to 26, 1918:

3. *Resolved*, That the American Institute of Architects expresses its approval of the idea and general character of the National Electrical Safety Code, and endorses the United States Bureau of Standards' proposal to give this Code a thorough field-trial, with the coöperation of all agencies concerned, of which the Institute is one.

4. The action of the convention on this and other resolutions offered by the Committee was to adopt the following: *Be it Resolved*, That the Board of Directors be authorized to give approval from time to time in the name of the Institute to such standards of materials or methods as it may deem wise.

5. The following extracts are from the *Report of the Director, Bureau of Standards, 1917:*

The **Electrical Safety Code** has now been **adopted** in one form or another, in part or in whole, by some fourteen state administrative bodies, and is also being used by the inspection departments of many cities and boards of underwriters. It is being utilized as a basis for a merit-rating schedule by the casualty interests, just as the Underwriters' Fire Code has been used by the fire underwriters for some years. Such schedule rating should result in emphasizing both the merits and demerits of particular installations from the safety standpoint, and tend to reduce accidents by proper financial recognition of each improvement made.

6. The Code is also being **voluntarily applied** by a large number of utilities and industrial concerns in their own practice. It is becoming generally understood that the stability in electrical practice provided by such a national standard also conduces greatly toward the general economy, the necessity for which is becoming emphasized during this period of national stress.

7. To aid in presenting the Safety Code in cases where conferencei s not possible with the limited staff of the Bureau, and **to assist in explaining the intended application of the Code**, a publication has

been prepared and is about to be issued entitled "*The scope and application of the National Electrical Safety Code.*" In this are included brief summaries of the different parts of the Code, reasons for the character of treatment employed, some discussion of the measures taken to secure adequacy and reasonableness, and some recommendations for the period of conducting inspections of installations to secure compliance with the Safety Code provisions.

8. Among the **national organizations actively co-operating with the Bureau** in the preparation, development, and introduction of the Safety Code are the American Institute of Electrical Engineers, The American Electric Railway Association, the American Institute of Architects, the American Railway Association, the American Telephone and Telegraph Company, the Association of Railway Telegraph Superintendents, the Bureau of Mines, the International Association of Municipal Engineers, the International Brotherhood of Electrical Workers, the National Electric Light Association, the National Fire Protection Association, the Postal Telegraph Company, Underwriters' Laboratories, Associated Manufacturers of Electrical Supplies, the National Electrical Contractors' Association, the Electric Power Club, Association of Edison Illuminating Companies, Workmen's Compensation Service Bureau, and the National Safety Council. It is largely through the coöperation of these organizations that the preparation and introduction of the Code have been thus far so successful.

Electricity Within and Around Buildings 6D

Service, Installations, Apparatus and Appliances in General. 6D1

Information Obtainable and General Activities. 6D1a

1. No attempt is here made to list the articles appearing in the periodicals devoted to electrical subjects or in the bulletins, journals, or proceedings of professional or technical societies. These will, however, be found listed as follows:
   (*a*) *Proceedings of the American Society of Civil Engineers.* Ten issues annually contain **List of Recent Engineering Articles of Interest** (from about 125 publications). See Classification, Electrical.
   (*b*) *Journal of the American Society of Mechanical Engineers,* **Review of Current Technical Literature.**
2. For **papers, addresses, and other literature on electrical subjects,** see the *Index* issued by most of the Associations and organized bodies referred to in this issue, including those referred to by Sullivan W. Jones under "Signs of Change," pp. 307–310.
3. Selections may also be made from the **Lists of Publications** issued by the *U. S. Bureau of Standards* and all *other Government Departments,* which describe how and from whom each document may be obtained.
4. *U. S. Bureau of Standards:*
   (*a*) In the *Report of the Director, 1917,* will be found a complete section given over to the **electrical work of the Bureau.** This includes not alone matters of scientific and technical import, but others of general interest, all affecting, in the end, the public at large. Items from this report of especial significance to architects, engineers, and constructors will be found quoted under the various subdivisions in this Serial Number.
   The Bureau coöperates with various electrical engineering, technical, and scientific societies and is represented on many of their technical committees, particularly where electrical standardization is involved.
   (*b*) *New Fee Circular:* The seventh edition of Circular No. 6, **Fees for Electric, Magnetic, and Photometric Testing,** has been prepared and issued.
   (*c*) The *Bureau* issued Jan. 10, 1918, *Circular No. 75,* **"Safety for the Household."** 127 pp., illus. 15 cents, from Superintendent of Documents, Washington, D. C. The section on Electricity comprises: Safety of Proper Application of Electricity; What Are the Dangers from Electricity? Private Electric Lighting Plants; Electrical Hazards Outdoors and their Avoidance; Electrical Hazards of Interior Wiring and Their Avoidance; Hazards of Household Electrical Appliances; Safety Precautions, etc.
5. **"Standard Handbook for Electrical Engineers,"** prepared by a staff of specialists, Frank F. Fowle, Editor-in-chief. 2,000 pp. The joint production of over sixty leading engineers; written for engineers in practice.
6. **"American Handbook for Electrical Engineers,"** Harold Pender, Editor-in-chief, and twenty-six Associate Editors. 2,023 pp.; illus. Electrical engineering and related subjects treated to meet everyday requirements of the practising engineer.
7. **"Electrical Engineers' Pocket-Book,"** Horatio A. Foster, with the collaboration of other engineers and specialists. 1,000 pp.; illus. Useful data for electrical engineers, architects, and electricians.
8. **"American Electricians' Handbook,"** Terrell Croft. 711 pp.; illus. Does not go into design and gives only enough theory to explain why certain things should be done in certain ways.
9. "*Architects' and Builders' Pocket-Book,*" F. E. Kidder; pp. 1371–1399: **"Electric Work for Buildings,"** W. H. Timbie. Contains brief general treatise on electricity, describes lighting systems, gives wire calculations, and offers general suggestions for electric work, conduit systems and specifications for interior wiring. Illus.
10. "*Mechanical Engineers' Handbook,*" Lionel S. Marks, pp. 1566–1779: Section on **Electrical Engineering** by M. C. Beebe and F. A. Kartak, tables and illustrations, wiring calculations.
11. "*American Civil Engineers' Pocket-Book,*" Mansfield Merriman, 1916, pp. 1310–1340: **Section on Electricity.**
12. **"Electrical Cost Data, Estimates and Working Tables,"** H. A. Foster.
13. **"Switchboards,"** Wm. Baxter, Jr. 192 pp.; illus.
14. **"Cushing's Standard Wiring, 1916."** H. C. Cushing, Jr. Based on 1915 N.E. Code's Rules. Has special section devoted to house wiring, and explains and illustrates the Code. Contains tables and formulas for inside and outside wiring.
15. **"Wiring of Finished Buildings,"** Terrell Croft, Consulting Electrical Engineer. 275 pp.; illus. Commercial and technical aspects. The technical end covers methods of wiring, tools, manipulation, fixtures, and gives examples of successful installations.
16. **"Electric Wiring, Diagrams, and Switchboards,"** N. Harrison. 272 pp.; illus. Included in this is a development of a simple circuit with the position of mains, feeders, and branches, and their treatment as a part of a wiring plan.
17. "*Theatres and Motion Picture Houses,*" Arthur S. Melloy, Architect. 1916. 125 pp. Includes sections on **Electric Wiring, Auditorium Lighting and Stage Lighting.**
18. **"Universal Wiring Computer,"** Carl Hering. 44 pp., 4 charts. For determining the sizes of wires for incandescent electric lamp leads and for distribution in general without calculation, with some notes on wiring and a set of auxiliary tables.
19. **"Handbook of Electrical Methods,"** compiled from the *Electrical World.* 284 pp.; illus. A collection of useful details that were contributed to the *Electrical World* in four years from the everyday experiences of the workers in the industry.
20. **"Alternating Current Wiring and Distribution,"** W. L. Emmet. 98 pp.; illus. Contains the principles of alternating currents and of their distribution and application to lighting and power.
21. **"Electric Wiring Specifications,"** J. H. Montgomery, Professor of Physics and Electrical Engineering in the University of Southern California. 139 pp.
22. **"Electric Lighting Specifications,"** E. A. Merrill. 213 pp. For architects and engineers.
23. **Interior Wiring**—*and Systems for Electric Light and Power Service,* A. L. Cook, of Pratt Institute. 416 pp.; illus. A manual of practice for electrical workers, contractors, architects, and schools.
24. **"The Wiring Handbook,"** with 32 labor-saving tables and digest of underwriters' rules, by C. P. Poole. 85 pp.; illus.
25. "*Building Estimators' Reference Book,*" Frank R. Walker, pp. 3300, 3301: **Section on Electric-Wiring.**
26. **"How to Check Electricity Bills,"** S. W. Borden. 55 pp.; illus.
27. "*Mechanical Engineers' Pocket-Book,*" W. Kent, pp. 1396–1467.
28. **"Electrical Data,"** *Underwriters' Laboratories.* 22 pp.; illus. Announcement of Label Service for Cartridge-inclosed Fuses and Snap Switches; Causes and Losses in Fires Due to Electricity; Rats and Lead-covered Cable; Fires and Accidents Due to Electrical Causes. Revised semi-annually. Sent free upon request.
29. "*I.C.S. Electrical Engineers' Handbook.*" Information presented in a form useful to architects and engineers, comprising tables and sections on **Electricity** and **Magnetism, Dynamos and Motors, Electric Lighting, Interior Wiring, Power Transmission,** and **Operation and Maintenance of Electrical Apparatus.** 414 pp.
30. The above handbook is independent of 23 volumes on **Electrical Engineering** and allied subjects in the extensive *International Library of Technology.*
31. "*Cyclopedia of Architecture, Carpentry, Building,*" American School of Correspondence. 10 volumes. Volume IX contains information on **Electric Wiring.**
32. In "*Handbook for Architects and Builders,*" Illinois Society of Architects, Vol. XX, 1917, see **"Sanitary and Electric Power Equipment,** including Plumbing, Illumination and Electric Power."
33. "*Practical Cost-Keeping for Contractors,*" F. R. Walker. 1918. Contains information on the essentials of **cost-keeping in connection with Electric Wiring;** also Chapter XXII devoted entirely to **Electrical Work.**
34. "*Handbook of Cost Data for Contractors and Engineers,*" H. P. Gillette.

35. "*A Handbook for Superintendents of Construction, Architects, Builders, and Building Inspectors,*" H. G. Richey. 742 pp.; illus.
36. "*The Building Foreman's Pocket-Book and Ready Reference,*" H. G. Richey. Information on **Electric Wiring**, etc.
37. "*Fire Prevention and Fire Protection,*" J. K. Freitag. 1912. Contains a section on **Electric Wiring.**
38. See *Index to Lefax Data Sheets*, for information on subjects of **interest electrically.**
39. See *Proceedings of the American Society for Testing Materials* (1A5c1) for:
    (*a*) **Report of Committee B-1 on Copper Wire**, Part 1, 1916.
    (*b*) **Report of Committee D-11 on Rubber Products**, Part 1, 1916 and 1917.
40. See "**Useful Electrical Information for Architects, Contractors, and Engineers,**" published by The Society for Electrical Development (6A6). Reprinted from *Sweet's Architectural Catalogue.* Copies furnished practising architects upon request.
41. See reference to important publications by manufacturers and others in "*Signs of Change*" by Sullivan W. Jones in this issue of *The Journal.*
42. For **further information** on **electrical apparatus, installations, and appliances in general**, with notes, explanations, and descriptions pertaining to the utilization of electrical energy in buildings, and with references, in many cases, to the National Electrical Code, latest underwriters' requirements, and other controlling factors, see pp. xii–xxii of the *General Electric Company*, in the *Industrial Section.* This includes **generators, switchboards, motors, and other apparatus, conduits, wiring devices, and other** subjects listed in the special G-E Index on p. xii. See, also, p. vi for description of G. E. Co.'s Section in Sweet's Architectural Catalogue, 1918.
43. For **other information** concerning subjects under this heading, see the following pages in the *Industrial Section.*
    Underwriters' Laboratories, **Inspected Electrical Appliances, Materials and Systems**, with illustration and paragraph for Specifications and Contracts, p. v.
    National Metal Moulding Co., **Inter-connecting Metal Mouldings**, p. xxxiii.

Standards Adopted or Recommended, and Procedure to be followed: 6D1b

1. *The National Electrical Code:*
(*a*) See the "*General Suggestions*" which preface the Code and which are printed in full under 6B1. **Particular attention** is called to the last two paragraphs recommending the general **use of wire-ways** for rendering concealed wiring permanently accessible and urging architects when drawing plans and specifications to **make provision for the channeling and pocketing of buildings** for these and all other possible arteries for the utilization of electrical energy.

Where the Code is printed for the information of architects and building constructors, sections relating essentially to methods of manufacture are usually omitted.

It is presumed that such sections are complied with by reputable manufacturers and have become a precedent to their products being labeled by the *Underwriters' Laboratories*, which label is the architect's and user's evidence of compliance with the requirements of the Code.

It is of interest to note that the building codes of many of the larger cities make no mention of compliance with the Code or offer any other requirements which must be complied with in the wiring of buildings for electricity. There are few cities or towns where the electric light and power company will supply service to a building until a certificate of inspection of the wiring is secured from the local board of underwriters or from the municipal electrical inspection department. Where there is a municipal inspection department, it is generally a violation of the city ordinance for the lighting company to provide service until such certificate has been obtained; in other cases there is an agreement with the lighting company not to connect to the building until the electrical work therein has been inspected and approved. It is also well known to the framers of codes that the furnishing of such a certificate is a requisite before fire insurance may be placed on any building, and that without such insurance mortgages cannot be negotiated nor other financing of building construction be consummated. It would seem then that this system is practical, and it is taken for granted that it will be understood without the frank acknowledgment which one might expect to find in building codes of the procedure to be followed.

2. *National Board of Fire Underwriters* (5A4):
(*a*) From the "**Building Code**—1915" (5D2b1) the following is quoted in full from Section 261: "**Electrical Installations**—All electrical wiring, apparatus, or appliances for furnishing light, heat, or power shall be in accordance with the 'National Electrical Code,' and no installation of electrical equipment shall be made, except in conformity thereto."
(*b*) In "**Dwelling Houses**" (5D2b2) the section relating to Electrical Installations is of exactly the same purport.

3. *U. S. Bureau of Standards* (1A5b):
(*a*) See description of National Electrical Safety Code (6C).
(*b*) **Standards for Electric Service**, *Circular No. 56.*

For several years the Bureau of Standards has been studying the questions of specifications for electric light and power service, and the requirements that should be made by municipalities or by state public service commissions of the public utility corporation engaged in furnishing such service. This study was published early in the fiscal year as *Circular No. 56, Standards for Electric Service.*

The demand for this circular has been large, and it is gratifying to note that the rules, specifications, and ordinances proposed have been made the basis for state rules and city ordinances in the instances named below. During the three years that the circular was in preparation, representatives of the Bureau attended hearings in various states, upon invitation by the commissions interested, and assistance was given to the commissions in Connecticut, District of Columbia, Maryland, Missouri, New Hampshire, Oregon, and West Virginia in drafting their rules for electric service. In a number of the states where no public utility commission is established, city authorities have been assisted in drafting ordinances on the regulation of electric and gas service. Louisville, Ky., has an ordinance based on the proposals made in *Circulars Nos. 32 and 56.* Since the Circular No. 56 has been issued, the proposed state rules, with necessary local changes, have been adopted by the Public Service Commission of Colorado, and are being made the basis of the revision of rules now under consideration in Illinois, New York, and Washington. The Public Utilities Commission of the District of Columbia has adopted the Bureau's proposed specifications for the acceptance of types of electric meters, as given in Circular No. 56, without change.

In addition to the proposed state rules and specifications for acceptance of types of meters, the circular contains three regulatory ordinances, suggested for cities of various sizes, descriptions of commission standardizing laboratories, and a complete and exhaustive digest of all state rules heretofore adopted and ordinances now in force in various cities. A revised edition is now in course of preparation.

See, among other publications of the Bureau of Standards:
(*c*) "**Copper Wire Tables,**" *Circular No. 31.*
(*d*) "**Testing of Mechanical Rubber Goods,**" *Circular No. 38.*
(*e*) "**Electric Transformers, Methods of Testing,**" F. B. Silsbee, *Scientific Paper No. 309.*

4. *Department of War, U. S. A.:*
(*a*) The Office of the Quartermaster-General, U. S. Army, has prepared and issued, under date of March, 1915, "**General Electrical Specifications No. 6**—for Furnishing and Installing Electric Light Wiring, Electric Fixtures, and Electric Bell Systems in Buildings and the Construction of Interior Lighting and Distributing Systems, all Pertaining to the Quartermaster Corps, U. S. Army." These may be obtained from Superintendent of Documents, Government Printing Office, Washington, D. C. The whole consists of 139 pages, and various sections relate to matters covered by the title and to the construction of exterior lighting and distributing systems, complete in every detail. The various sections are referred to in this Serial Number under their appropriate subdivisions, including the Standard Symbols and other illustrations.

5. *Department of the Navy, U. S. A.:*
(*a*) "**Index to Specifications** Issued by the Navy Department for Naval Stores and Materials," together with individual copies of the many hundreds of specifications issued, may be obtained upon application to the Bureau of Supplies and Accounts, Navy Department, Washington, D. C.
(*b*) These do not cover any one specification for a complete electrical installation, as in the case of the War Department specifications, but they do embrace various features of installations for buildings, as well as for vessels, and are issued under these classifications:
No. 15. **Electrical Cable and Wire** (Insulated).
No. 16. **Radio Appurtenances**, Outfits and Supplies.
No. 17. **Electrical Material**—other than Classes 15 and 16. These include **Conduit and Conduit Fittings, Storage Batteries, Dynamotors, Fiber, Fuses, Generators, Switchboards, Meters, Motors, Transformers**, etc.
The *Bureau of Supplies and Accounts* issues also:
(*c*) "General Specifications for Inspection of Material."
(*d*) "General Information Regarding Inspection at Place of Manufacture of Material for the United States Navy."

6. *Department of the Treasury:*
The Supervising Architects' Office issues specifications relating separately to each Federal building emanating from that office. Interesting unofficial contributions to the subject of electrical installations in such buildings will be found in "*Mechanical Equipment of Federal Buildings*" and "*The Journal of the Society of Constructors of Federal Buildings,*" elsewhere referred to.

7. A publication with which all architects should be familiar, in connection with the mechanical equipment in buildings other than residences, is the "*Mechanical Equipment of Federal Buildings under the Control of the Treasury Department,*" by Nelson S. Thompson, Chief Mechanical and Electrical Engineer, Office Supervising Architect, Treasury Department, Washington, D. C. The following are among the subjects treated—others will be mentioned under various appropriate headings in this and later Serial Numbers:
(*a*) Chapter VI, *Conduit and Wiring Systems.*
This gives the **standard arrangement for electric installations** in Federal buildings, including **underground service, switchboards, distribution tablets, table of conduit sizes** for conductors, and of **lead-encased cable** in unlined metallic conduit, describes **outlets and standard wiring for**

lighting, gives **wiring formulas and tables**, gives **data on illumination** with tables of effective lumens for different lamps and reflectors, and **estimating data on electrical appliances.**

(*b*) Chapter IX, *Small Power Plants.*
This is prepared with special reference to installations in Federal buildings under control of the Treasury Department and states all items which require consideration in determining whether the mechanical equipment should include a power plant for the **generation of electric current for light and power.**
It discusses **types of engines and electric generators**, gives tables and includes "**A specification for Engines and Generators as prepared in the office of the Supervising Architect.**"

(*c*) Chapter X, *Motors and Controlling Apparatus.*
Discusses direct and alternating current **motors** and gives various recommendations.

(*d*) Chapter XII, *Operating Data.*
This gives calculations of **cost of operating mechanical equipments** with sample reports of those made in certain Federal buildings and includes a discussion of the isolated plant versus the central station as regards heat as well as electric current.

8. *National Fire Protection Association* (5A3):
See "*Field Practice,*" Inspection Manual of the N.F.P.A., pp. 23, 31, 48, and 75–77 for notes on the **installation, care and maintenance of motors and power equipment**, and other sections for explanations of the rules and requirements of various inspection departments, of label service, and of matters in general pertaining to good practice.

9. *Underwriters' Laboratories* (5A4*a*):
(*a*) "**List of Inspected Electrical Appliances.**"
(*b*) "**List of Inspected Mechanical Appliances.**"
(*c*) "**List of Appliances Inspected for Accident Hazard.**"
"Products labeled or listed as mentioned above are not necessarily uniform in quality or merit, the labeling and listing indicating only compliance with underwriters' requirements."
These lists, revised semi-annually on the dates given in the Industrial Section on page v, are sent upon request.
(*d*) "*Code for Electrical Appliances,*" consisting of the following Standards:
1. *Standard for* **Rubber-Covered Wires and Cables.**
2. *Standard for* **Rigid Conduit.**
3. *Standard for* **Armored Cable.**
4. *Standard for* **Cartridge-Enclosed Fuses.**
5. *Standard for* **Snap Switches.**
6. *Standard for* **Knife Switches.**
7. *Standard for* **Cabinets and Cutout Boxes.**
8. *Standard for* **Electric Signs.**
9. *Standard for* **Panelboards.**
10. *Standard for* **Cutout Bases.**
11. *Standard for* **Soldering Lugs.**
These eleven Standards are published separately and may be secured at $1 per copy, or at $10 for the set.

10. *Inspection Department, Associated Factory Mutual Fire Insurance Companies* (5A6*a*):
(*a*) "**Electric Light and Power Equipments—Rules.**"
(*b*) "**Approved Electrical Fittings**" (subject to semi-annual revision). "The 'List of Approved Electrical Fittings' is designed to enable mill managers and electrical contractors to quickly learn where thoroughly reliable fittings can be obtained. This pamphlet forms a supplement to 'Rules for Installing Electric Light and Power Equipments,' which should be carefully followed in all electrical construction work."

11. *Standardization Rules of the American Institute of Electrical Engineers* (6A1):
In these particular effort has been directed toward defining in engineering terms the rating of electrical machinery and the requirements connoted thereby.
Gives **standard definitions of electrical terms, technical data, standard performance specifications**, and tests of electrical machinery, standard voltages and frequencies, and **general recommendations**, as adopted by the Standards Committee and approved by the Board of Directors, June 28, 1916, with supplement approved on June 28, 1917. 25 cents.
International Standardization (quoted from above):
"It becomes impossible to carry standardization beyond a very elementary stage in any one country without influencing the procedure in other countries. **Co-operative relations** have been entered into at different times between the A.I.E.E. Standards Committee and corresponding committees in other countries, to considerable mutual advantage, but especially through the influence of the *International Electrotechnical Commission*, an international body engaged in international electrical engineering standardization."

12. *The American Society for Testing Materials* (1A5*c*) has adopted the following:
(*a*) **Standard Specifications for Hard-Drawn Copper Wire**, Serial Designation B 1–15.
(*b*) **Standard Specifications for Medium Hard-Drawn Copper Wire**, Serial Designation B 2–15.
(*c*) **Standard Specifications for Soft or Annealed Copper Wire**, Serial Designation B 3–15.
(*d*) **Tentative Standard Specifications for Insulated Wire and Cable, 30 per cent Hevea Rubber**, Serial Designation D 27–16 T.
(*e*) And other standard specifications relating to **cables, trolley wires**, and **specialized products.**

13. *The Rubber-Covered Wire Engineers' Association* has issued:
(*a*) **Specifications for 30 per cent fine dry Para rubber covering.**

14. "*Universal Safety Standards:*" A reference book of Rules, Drawings, Tables, Formulas, Data and Suggestions for use of Architects, Engineers, Superintendents, Foremen, Inspectors, Mechanics and Students, by Carl M. Hansen, M.E., Consulting Safety Engineer, Member American Society Mechanical Engineers. Compiled under the direction of and approved by the Workmen's Compensation Service Bureau, New York City.

15. See, also, "*Electrical Edition*" of same, both of which contain **diagrams and descriptions of guards for motors, switchboards, starting panels, controllers, fuse-boxes**, and other safety devices.

16. *The American Society of Mechanical Engineers.* For standards applicable to electrical installations, see **Index to A. S. M. E. Standards**, p. 427, and those which follow giving abstracts of reports of committee on "Standardization of Engines and Dynamos," and others, in *Condensed Catalogues of Mechanical Equipment*, 1917.

Standard Symbols and Charts. 6D1c

1. **Standard Symbols for Wiring Plans**, adopted and recommended by the *National Association of Electrical Contractors and Dealers* and the *American Institute of Architects.* Copies may be had without charge, upon application to the Secretary of the Association, or to the Executive Secretary of the American Institute of Architects at The Octagon, Washington, D. C. In addition to the copies on cardboard, which may be had as mentioned, these Symbols may be seen illustrated and explained in:
(*a*) "*Kidder's Pocket-Book*—1916," pp. 1398–1399.
(*b*) "*Sweet's Architectural Catalogue*—1917," p. 1423.
(*c*) "*Portfolio of the Architectural Service Corporation,*" Service Sheet No. 1, January, 1916.

2. **Standard Conduit Charts**, showing standard sizes of conduits for the installation of wires and cables, adopted and recommended by the *National Association of Electrical Contractors and Dealers*, and required by the *National Electrical Code.* Completely illustrated with drawings of conduits, wires and cables at one-half full size; copyright 1912. These are mounted upon boards 21½ by 30, and may be obtained upon application to the Secretary, for $3, postage additional. They also contain diagrams of conduits for telephones and signaling systems not defined by the Code, as mentioned under 6F2.

3. "**Standard Symbols**" are also illustrated in U. S. Army Specifications (6D1*b*4).

4. In the "*Handbook for Architects and Builders,*" of the Illinois Society of Architects, Vol. XX, 1917, see Section entitled "**Nomenclature of Drawings,**" which contains **Lighting Symbols.**

Electric Elevators and Dumbwaiters 6E

1. The *National Electrical Code* (6B2) contains installation rules for **Elevator Shaft Wiring** (N.E.C., Section 16g), and for **Elevator Cable** (N.E.C., Section 51d).

2. "*Uniform Regulations for the Construction and Installation of Passenger and Freight Elevators,*" adopted Oct. 12, 1917, by The Elevator Manufacturers' Association of the U. S. (6A19). **Definitions and Regulations** applying to new elevator installations, **Shaftways**; 40 pages of **specifications in detail** as to regulations and accessorial requirements.

3. In "*Mechanical Equipment of Federal Buildings*" (6D1*b*7) see: Chapter VIII, **Elevators.**
This gives **data of the utmost importance** to architects, especially in the preliminary study necessary to reach a decision **upon the number, type, and speed of elevators**, for all kinds of structures.
With the aid of individual experience and judgment, a close approximation of the number of elevators and of the size of each which should be installed in a given building may be based on the facts in regard to elevator service in this chapter which are stated by R. P. Bolton, consulting engineer, of New York, in his treatise entitled "**Elevator Service.**"

It also gives data to determine the **loads to be carried** and **space requirements**, and states recommendations as to various forms of equipment, concluding with a *"Specification for the standard tandem worm-geared electric passenger elevator with direct current motor and full magnet control, such as is installed by the Office of the Supervising Architect,"* and a supplementary specification for *"Alternating Current Elevators,"* following which is **"Instructions Relative to the Inspection and Test of New Elevators."**

4. *"Architects' and Builders' Pocket-Book," Kidder-Nolan:* Section on **"Elevator Service in Buildings,"** pp. 1579–1597; also contains information, similar in importance and interest to the foregoing, on Electric Elevators and gives valuable **data for calculating the number** of elevators required, determining **sizes, loads, speed,** etc.
5. *"Elevator Shaft Construction:* or, **Practical Suggestions for the Installation of Electric Elevators in Buildings,"** H. R. Cullmer and A. Bauer, with introductory note by R. P. Bolton, 1912, a treatise for architects and builders on elevator shafts, machine rooms and bulkheads, with **tables and formulas** for calculating **sizes and capacities.** Covers also **freight** and **sidewalk elevators, dumbwaiters,** specification writing, **doors** and **appliances,** etc.
6. **"The Arrangement and Requirements of Elevators in Office Buildings,"** C. F. Baker (from the *Architectural Record*), *Engineering-Contracting,* May 17, 1916.
7. *"Standard Handbook for Electrical Engineers,"* Frank F. Fowle: Section on **"Electric Elevators,"** by D. L. Lindquist, Chief Engineer Otis Elevator Co., and Asso. A.I.E.E.
8. *"American Handbook for Electrical Engineers,"* Harold Pender: Section on **"Electric Elevators."**
9. *"Electrical Engineers' Pocket-Book,"* Horatio A. Foster: Section on **"Electric Elevators."**
10. *"Mechanical Engineers' Pocket-Book,"* Wm. Kent: Section on **"Hoisting and Conveying,"** pp. 1181–1218.
11. *"Mechanical Engineers' Handbook,"* Lionel S. Marks: Section 9 treats of **"Hoisting and Conveying,"** by C. Kemble Baldwin.
12. *"Building Estimators' Reference Book,"* Frank R. Walker: Chapter XXII on "Miscellaneous Building Specialties," pp. 2900–2906, gives information on **Cost of Electric Passenger Elevators, Electric Freight Elevators, Cost of Cars** and **Dumbwaiters.**
13. *"Universal Safety Standards"* (described under 6D1*b*14 shows **safety devices, controls, guards, hatchways and entrances, automatic trap-doors and gates, platforms and guards for sheaves** and for safe installations in general.
14. **"Safety Devices for Elevators,"** Jacob Gentz, Jr., in *Power,* Jan. 9, 1917. Illus.
15. The codes of cities or **ordinances regulating elevator construction** will also afford specificational requirements. Valuable suggestions will be found in **catalogues** and other literature of **manufacturers.**

Telephones, Signaling Systems, Bells and Clocks 6F

1. Attention is directed to the **necessity of providing** in all buildings such **chases, channels, pipe-ducts, or runways** as will adequately meet all needs for installing arteries of service, not only for present requirements, but allowing also for reasonable future needs and the possibility of installations not now thought of. See the last two paragraphs of *"Suggestions"* from the *National Electrical Code* under 6B1.
2. It should be noted that the National Electrical Code *does not* prescribe the sizes for conduits for signal systems and that the wires permitted by the telephone companies of various cities differ as to thickness of insulation. The *Chart* (described under (6D1*c*2) therefore represents wires with both light and heavy insulation and shows conduit sizes accordingly.
3. **Telephone Service Standards,** *Report, Bureau of Standards,* 1917:
   (*a*) The investigation of the principles underlying the definition of telephone service standards is of the greatest importance to state public utility commissions, as well as to the millions of telephone users throughout the United States. In order to secure results of greatest value, it is necessary to enlist the coöperation of the telephone industry, which will of course be benefited by such work. In view of this fact, the Bureau confidently counts upon its whole-hearted support.
   (*b*) A large number of comparisons of the efficiency of transmitters and receivers of different makes have been made when using the voice as a source of sound, and, in addition, a study has been undertaken of the effect of the length of subscribers' lines in common battery systems with relation to the efficiency of transmitters of various types of makes.
4. *The U. S. Navy Department,* as described under 6D1*b*5, issues **specifications,** under Classification 17, **pertaining to telephones, annunciators, batteries, bells and buzzers,** etc.
5. See *General Electrical Specifications No. 6, U. S. Army,* described under 6D1*b*4; specifies and illustrates **bell systems, batteries, bells, push-buttons, annunciators, buzzers, transformers, speaking tubes,** etc.
6. *"Mechanical Equipment of Federal Buildings,"* described under 6D1*b*7, Chapter VI, treats of **conduit systems for time-clocks;** also **town-clocks, fire-alarm** and **watchman's time detector systems, vault-protection systems, telephone** and **call-bell conduits,** and conduits for **signal systems.**
7. **"Telephone Construction, Installation, Wiring, Operating and Maintenance,"** W. H. Radcliffe and H. C. Cushing, Jr. 223 pp.; illus. For electricians, wiremen, engineers, architects, contractors, and others interested in standard practice.
8. *"Architects' and Builders' Pocket-Book,"* F. E. Kidder: **"Interphones and Automatic Telephones for Intercommunicating Service."**
9. *"American Handbook for Electrical Engineers,"* Harold Pender: Section on **"Telephone Instruments and Circuits."**
10. *"Standard Handbook for Electrical Engineers,"* Frank F. Fowle: Section on **"Telephony, Telegraphy, and Radio-telegraphy."**
11. *"Electrical Engineers' Pocket-Book,"* H. A. Foster: **"Telephony."**
12. **"American Telephone Practice,"** K. B. Miller. 904 pp.; illus.
13. *"American Civil Engineers' Pocket-Book,"* M. Merriman, p. 1339. **Open-circuit batteries** for intermittent service, such as **call-bells** and **short telephone lines.**
14. *"Fire Prevention and Fire Protection,"* J. K. Freitag: **"Automatic Fire Alarms, and Sprinkler Alarm and Supervisory Systems;" "Watchmen, Watch-Clocks and Manuals."**
15. *"Crosby-Fiske Handbook of Fire-Protection,"* Fifth Edition. Section on **"Signaling Systems and Watchman Service."**
16. *"Field Practice,"* Inspection Manual of the N.F.P.A. Information on **signaling systems,** and other installations.
17. *"I.C.S. Telephone and Telegraph Engineers' Handbook."* Tables and sections on **Telephone and Telegraph Systems, Batteries,** etc. 398 pp.
18. See the *"I.C.S. Electrical Engineers' Handbook"* (6E1*y*), pp. 369–371, for information on **signal-bell circuits.**
19. See *Index* to **Lefax Data Sheets,** for information on subjects herein treated.
20. Some **telephone companies** insert **notices** similar to the following in their directories: "Adequate facilities for handling telephone wires and cables in new buildings will mean the most satisfactory telephone service for the tenants. Satisfied tenants are an asset to the owner of a building. The Telephone Company asks the coöperation of the architects. When designing new buildings, call the Plant Engineer."

Heating, Cooking, and Other Appliances and Devices 6G

1. The *U. S. Navy Department* (6D1*b*5) has issued among others, under classification 17, the following specifications:
   (*a*) **Heaters, air, electric** (for ships). (*b*) **Heaters, electric, disk type.** (*c*) **Heaters, water, electric** (for battle dressing-stations). (*d*) **Fans, desk and bracket.** (*e*) **Flatirons, electric.** (*f*) **Lanterns, hand, electric.**
2. The National Electrical Code (6B2) contains **rules** for the **installation of Electric Heaters** (N.E.C., Section 25).
3. See **"Safety for the Household,"** *Bureau of Standards Circular No. 75,* referred to under 6D1*a*4*c*.
4. See "Field Practice"—Inspection Manual of the N.F.P.A., for data and **notes on installation, care,** and **maintenance** of electric **heating devices, irons,** and **other appliances.**
5. In *"Mechanical Equipment of Buildings,"* L. A. Harding and A. C. Willard, Vol. I, 1916, see Chapter XI devoted to **"Electrical Heating"** (contains tables and illustrations).
6. **"Electric Cooking Appliances,"** R. G. Kloeffler. *Bulletin No. 9, Kansas State Agricultural College,* Engineering Experiment Station. Dec. 1, 1917. 71 pp.; tables, diagrams, and illus.
7. In *"Mechanical Engineers' Pocket-Book,"* W. Kent, see **Electrical Heaters, Heating** and **Furnaces,** pp. 713–714 and 1420–1425.
8. See **"Electric Heating and Electric Heater Control,"** W. S. Hammond, Jr. 1914. 10 cents. Reprint of paper read before the *American Society of Heating and Ventilating Engineers.*
9. See **"The Hazards of Domestic Electrical Appliances,"** W. J. Canada, N.F.P.A. *Quarterly,* October, 1917. 10 pp. Address at convention of International Association of Municipal Electricians, September, 1917.
10. Data on the various appliances and devices pertaining to the comfort and convenience of occupants of hotels, apartment houses, office buildings, residences, and other structures, will occasionally be found by looking in the index of some of the publications referred to under 6D but so rapidly is development taking place in their manufacture and utilization that one chief source of information to be had concerning them is through the catalogues and other literature of the manufacturers.

11. Some notes and suggestions on various devices will be found in *Useful Information for Architects, Contractors and Engineers* referred to under 6D1*a*40.

12. For **data on appliances and devices** of the latest type and for **publications pertaining to them**, see the *General Electric Company's* presentation in the *Industrial Section*, pp. xii–xxii.

Vacuum Cleaners 6H

1. This important modern development in building sanitation will also not be found treated in many of the handbooks elsewhere listed, though the operating and controlling features of so many of these systems, whether stationary or portable, are of importance electrically.

2. There is in the process of organization an association to be known as the *Vacuum Cleaner Manufacturers' Association*. Mr. P. H. Seward, of 1480 Broadway, New York City, First Vice-President.

3. For a **complete treatise on the subject**, including a highly interesting historical review of the development of the **Vacuum Cleaner**, see "*Vacuum Cleaning Systems*," M. S. Cooley, Mechanical Engineer in office of the Supervising Architect, Treasury Department. Copyright 1913 by Heating and Ventilating Magazine Company of New York. 232 pp., completely illustrated. This states the **requirements of an ideal system** and gives descriptions and diagrams of all mechanical and electrical parts of various systems, including the pipe and fittings, controlling appliances and tools. It gives data on the **selection of various types**, methods of testing and *specifications for five classes of plants*. It also describes **portable vacuum cleaners**, including those for attachment to lighting systems.

4. In "*Mechanical Equipment of Federal Buildings*." (6D1*b*7), see: Chapter XI, **Vacuum Cleaning Systems.**
This contains data on stationary systems of both the so-called high-vacuum and low-vacuum types and gives tables for determining the sizes of plants and recommendations for installation. It also includes a complete "*Specification such as is used by the office of the Supervising Architect for a Four-sweeper Plant*," included in which is a description of the **electric motor** and its **automatic control.**

5. *Kidder's "Architects' & Builders' Pocket-Book,"* 1916. **"Vacuum Cleaning,"** pp. 1628, 1629.

6. In "*Mechanical Equipment of Buildings*," L. A. Harding and A. C. Willard, Vol. II, 1917, see Chapter XXVII **"Vacuum Machines."**

7. For detailed drawings of the mechanism and data pertaining to various **vacuum-cleaner systems**, see the catalogues and other literature of the respective manufacturers.

Illumination, Lighting Fixtures and Lamps 6J

Electrical phases of these subjects will be found fully described in the *Structural Service Book*, Vol. I, under 6H, 7M, 11B13, and 12F5.

1. Many of the publications pertaining to illumination treat of **illumination by gas** as well as by **electricity.** Therefore, this subject will be treated with reference to both gas and electricity, as well as daylighting, in the forthcoming issue devoted to "Gas," wherein also will appear a description of the *Illuminating Engineering Society* and of the *Institute of Lighting Fixture Manufacturers.*

2. For data on **Illumination—Interior and Exterior**, in this issue, see pp. xxi and xxii of the General Electric Company's presentation in the *Industrial Section.*

Lightning Protection 6K

See *The Journal*, Serial No. 5H to which add the following:

1. Considerable work has been done by the *U. S. Bureau of Standards* in the direction of **preparing specifications** for the **protection of buildings against lightning**, but owing to the emergency growing out of the military situation it has been necessary to suspend this work temporarily. A little later, as soon as opportunity affords, it will be continued and specifications will be prepared for protecting different kinds of buildings and other structures, so as to make it easier for architects and owners who wish to place lightning protection on structures to do so as efficiently and economically as possible.

2. In the *Bureau of Standards' Circular No. 75* **"Safety for the Household"** (6D1*a*4*c*) is a Section on **"Lightning"** with suggestions, data, and diagrams.

3. See the National Electrical Code (6B2) for the construction, grounding, and installation of Lightning Arresters (N.E.C., Sections 5, 15, 40, 85, and 86).

4. *"Fire Prevention and Fire Protection,"* J. K. Freitag. 1912. Contains section on **"Protection Against Lightning."**

Electrolysis 6L

References to this subject will be found in the *Structural Service Book*, Vol. I, Serial No. 6, and under 11B2, 11B3, and 12C, which latter references will be again listed in later Serial Numbers this year.

1. See various **Technologic Papers** of the *U. S. Bureau of Standards*, which are summarized in (2) below:

2. See, **"Digest of Publications** of *Bureau of Standards* on **Electrolysis of Underground Structures** *caused by the Disintegrating Action of Stray Electric Currents from Electric Railways,"* prepared by Samuel S. Wyer. January, 1918. A limited number of copies of this Digest are available to interested parties upon application to the Bureau of Standards, Washington, D. C.

3. The following extracts from *Report, Bureau of Standards*, 1917, will be found of interest:

(*a*) The Bureau has been studying the electrolysis question for the past seven years and has done a large amount of work in connection with it. The first problem investigated was that concerning the effects of **electrolysis in reinforced concrete**, after which special attention was given to **electrolysis of underground pipes.** This has included laboratory investigations concerning the effects of electric current on concrete and metal pipes, **tests of pipe coverings**, the **corrosion of metals in the soil**, methods of measuring soil resistance, and various other experimental phases of the work; methods of **electrolysis mitigation** that have been used or proposed; field studies in actual practice with the application of remedies; a determination of **cost and results obtained.**

(*b*) The *Bureau of Standards* has made a number of **electrolysis surveys** in various cities, with the view of making detailed studies under typical conditions, the results of which could be published for the benefit of the public. These investigations have been made in coöperation with utility companies and municipalities concerned, and largely at their expense. Complete **mitigative systems** have been **installed by several cities**, demonstrating the most effective means of meeting the problem under various conditions. The Bureau makes somewhat detailed tests in each of these places about once a year to make sure that the protective systems are being properly maintained.

4. See **"Electrolysis in Underground Pipes,"** in *Canadian Engineer*, Oct. 12, 1916. Abstract from Report, U. S. Bureau of Standards.

5. See, also, **"Insulation as a Means of Minimizing Electrolysis in Underground Pipes,"** E. B. Rosa and Burton McCollum, *"Proceedings" American Gas Institute*, Vol. VI, 1911, Part 1, p. 233.

6. In *"Trautwine's Civil Engineers' Pocket-Book,"* see section on **"Experiment and Practice,"** pp. 1168, 1182.

7. For **classified references** to literature on this subject and on others covered by some of the subdivisions herein, see **"Lists"** and **"Reviews"** mentioned under 6D1*a*1.

General Index to Structural Service Department

Serial numbers will be published as subjects are covered. For complete classified index, see Structural Service Book, Vol. I

Acoustics. Page
Johns-Manville Co., H. W. XXVI
Administration (General and Office). 1B
Asbestos Products.
Johns-Manville Co., H. W. XXVI
Automatic Sprinklers. 5G
Billiard Tables and Bowling Alleys. 4F
Boilers.
American Radiator Company . . . XI
Smith Co., The H. B. XXIII
Branding and Trademarking of Timber and Lumber. 4B5
Brick. 3H
Broken Stone. 2D
Blue Prints.
New York Blue Print Paper Co. . . . XXXIV
Cast Stone. 2B12
Cement and Concrete. 2B
Alpha Portland Cement Co. . . . 2d Cover
Atlas Portland Cement Co., The . . XLVI
Chutes (Laundry).
Pfaudler Co., The XXXVII
Conduits.
National Metal Molding Co. XXXIII
Contractural Relations. 1C
Cork Flooring.
Kennedy, Inc., David E. XLV
Corrosion and Treatment of Metals.
Damp-Proofing. 1F
Doors (Metal). 5F
Merchant & Evans Co. XXVIII
Doors (Wood). 4E2
Curtis Companies, The XXXII
Electrical Fittings and Supplies. 6
General Electric Company VI
General Electric Company . . . . XII–XXII
National Metal Molding Co. XXXIII
Electric Elevators and Dumbwaiters. 6E
Electrolysis. 6L
Engineering Service. 1A
Corrugated Bar Co. XLIII
Estimation. 1D
Quantity Survey Co., The . . . 4th Cover
Corrugated Bar Co. XLIII
Excavation. 1E
Filters.
Loomis-Manning Filter Distributing Co. XLIV
Fittings (Steam, Plumbing, Gas).
Crane Co. XXV
Flooring (Cork).
Kennedy, Inc., David E. XLV
Flooring (Wood). 4E4
Floor Hardener.
Sonneborn Sons, Inc., L. . . . . 3d Cover
Foundational Requirements, Concrete Piling, Steel Piling. 1E
Gas Appliances.
Humphrey Company XLII
Glass (Stained).
Heinigke & Smith XXVIII
Granite. 3C
Webb Pink Granite Co. XXXV
Glass (Wire). 5E
Mississippi Wire Glass Co. XXXVIII
Gypsum. 5E Page
Hollow Tile. 3H
Inspection Service. 1A
Underwriters' Laboratories V
Insulations.
Certain-teed Products Corp'n. . . . XXIX
Johns-Manville Co., H. W. XXVI
Interior Finish (Wood). 4E2
Curtis Companies, The XXXII
Laboratories (Testing and Research). 1A
Underwriters' Laboratories V
Lath (Metal). 5E
Associated Metal Lath Manufacturers X
Berger Mfg. Co., The XXXIV
Lath (Wood). 4E3
Bishopric Manufacturing Co., The . III
Laundry Chutes.
Pfaudler Co., The XXXVII
Lighting Fixtures and Lamps. 6J
Lime and Hydrated Lime. 2C
Limestone. 3B
Lumber. 4B
Curtis Companies, The XXXII
Southern Pine Association XXX
White Pine Bureau XXIV
Magnesia Covering.
Johns-Manville Co., H. W. XXVI
Magnesia Association of America . . VII
Marble. 3D
Metal Lath. 5E
Associated Metal Lath Manufacturers X
Berger Mfg. Co., The XXXIV
Mill Construction. 4E
Southern Pine Association XXX
Monuments and Mausoleums. 3A2
Presbrey-Coykendall Co. XXXIII
Paints, Varnish and Enamel.
Certain-teed Products Corp'n. . . . XXIX
Matheson Lead Co. XXXVII
Paints (Waterproofing). 1F
Parquetry Work. 4E4
Piling (Concrete). 1E
Piling, Piers and Bulkheads. 4D
Pipe (Cast Iron).
Cast Iron Soil Pipe Makers' Association XLI
Pipe (Wrought Iron). 5A
Byers Co., A. M. IV
Plumbing Equipment.
Crane Co. XXV
Kohler Co. XLIV
Standard Sanitary Mfg. Co. XXXI
Preservation of Iron and Steel. 1G9
Preliminary Procedure. 1B
Quantity Survey. 1D
Quantity Survey Co., The . . . 4th Cover
Radiators (Steam).
American Radiator Company . . . XI
Smith Co., The H. B. XXIII
Research. 1A
Roofing. 5E
American Sheet and Tin Plate Co. . XXXIX
Certain-teed Products Corp'n. . . . XXIX
Johns-Manville Co., H. W. XXVI
Roofing, continued. Page
Merchant & Evans Co. XXVIII
Taylor Co., N. & G. XXVIII
Safety Devices. 5F
Sandstone. 3E
Sash (Steel). 5E
Lupton's Sons Co., David XL
Sheet Metal Cornices, Skylights, Ventilators. 5E
Lupton's Sons Co., David XL
Shingles (Wood). 4E3
Shutters (Rolling Steel). 5F
Slate. 3G
Soapstone. 3F
Specifications and Drawings. 1C
Stains, Shingle.
Cabot, Inc., Samuel XXXIV
Standardization. 1A
Stone Masonry, Broken Stone, Sand, and Gravel. 2D
Structural Steel and Iron. 1G
Stucco.
American Materials Co., Inc., . . . XXXIX
Atlas Portland Cement Co., The . . XLVI
Stucco Board.
Bishopric Manufacturing Co., The . III
Telephones, Signal Systems. 6F
Terra Cotta. 3H
Tests. 1A
The National Electrical Code. 6B
The National Electrical Safety Code. 6C
Tile (Mosaic).
Associated Tile Manufacturers, The . XXVII
Timber (Standing) and Manufactured Lumber. 4B
Tin Roofing. 5E
American Sheet and Tin Plate Co. . XXXIX
Merchant & Evans Co. XXVIII
Taylor Co., N. & G. XXVIII
Treatment of Concrete Floors and Surfaces. 2B
Sonneborn Sons, Inc., L. . . . . 3d Cover
Treatment of Woods. 4C
U. S. Geological Survey. 2A
Vacuum Cleaners. 6H
American Radiator Company . . . XI
Varnish.
Certain-teed Products Corp'n. . . . XXIX
Murphy Varnish Company . . . XXXVIII
Ventilation.
Lupton's Sons Co., David XL
Ohio Blower Co., The XXXVI
Water-Heaters (Gas).
Humphrey Company XLII
Waterproofing. 1F
Certain-teed Products Corp'n. . . . XXIX
Whitewash (Gov't Formulas). 2C5
Windows (Metal). 5E
Lupton's Sons Co., David XL
Windows (Wood). 4E2
Curtis Companies, The XXXII
Wire Glass. 5E
Mississippi Wire Glass Co. XXXVIII
Wood. 4B
Curtis Companies, The XXXII
Southern Pine Association XXX
White Pine Bureau XXIV

Classified Index to Industrial Section

Page
Alpha Portland Cement Co. . . . 2d Cover
American Materials Co., Inc. XXXIX
American Radiator Company XI
American Sheet and Tin Plate Co. . . . XXXIX
Associated Metal Lath Manufacturers . X
Associated Tile Manufacturers, The . . XXVII
Atlas Portland Cement Co., The . . . XLVI
Berger Manufacturing Co., The . . . XXXIV
Bishopric Manufacturing Co., The . . III
Byers Co., A. M. IV
Cabot, Inc., Samuel XXXIV
Cast Iron Soil Pipe Makers' Association XLI
Certain-teed Products Corp'n. XXIX
Corrugated Bar Co. XLIII
Crane Co. XXV
Curtis Companies, The XXXII
General Electric Company VI
General Electric Company . . . . . XII–XXII
Heinigke & Smith XXVIII
Humphrey Company XLII
Johns-Manville Co., H. W. XXVI
Kennedy, Inc., David E. XLV
Kohler Co. XLIV
Loomis-Manning Filter Distributing Co. XLIV
Lupton's Sons Co., David XL
Magnesia Association of America . . . VII
Matheson Lead Co. XXXVII
Merchant & Evans Co. XXVIII
Mississippi Wire Glass Co. XXXVIII
Murphy Varnish Company XXXVIII
National Metal Molding Co. XXXIII
New York Blue Print Paper Co. . . . XXXIV
Ohio Blower Co., The XXXVI
Pfaudler Co., The XXXVII
Presbrey-Coykendall Co. XXXIII
Quantity Survey Co., The . . . . 4th Cover
Smith Co., The H. B. XXIII
Sonneborn Sons Co., L. . . . . 3d Cover
Southern Pine Association XXX
Standard Sanitary Mfg. Co. XXXI
Taylor Co., N. & G. XXVIII
Underwriters' Laboratories V
Webb Pink Granite Co. XXXV
White Pine Bureau XXIV

Standardized Materials Insure Safe Construction

That is why the discriminating architect specifies metal lath according to the standards recommended by the Associated Metal Lath Manufacturers.

Just as the American Institute of Architects establishes the standards of Architectural practice, so the progressive manufacturers of metal lath are continually establishing proven standards for the manufacture and use of metal lath.

This Association recommends the following standard weights and gauges of metal lath:

Number	24	gauge,	weight	3.4	pounds	per	square	yard.
"	25	"	"	3.0	"	"	"	"
"	26	"	"	2.5	"	"	"	"
"	27	"	"	2.3	"	"	"	"

Specify by gauge and weight.

The Associated Metal Lath Manufacturers

901 Swetland Building, Cleveland, Ohio

MEMBER COMPANIES:

The Berger Mfg. Co. . . . . Canton, Ohio
The Bostwick Steel Lath Co. . . . . Niles, Ohio
Consolidated Expanded Metal Companies . Braddock, Pa.
The General Fireproofing Co. . . . Youngstown, Ohio
Milwaukee Corrugating Co. . . . Milwaukee, Wis.
Northwestern Expanded Metal Co.
918-950 Old Colony Building, Chicago, Ill.
Penn Metal Co. . 201 Devonshire Street, Boston, Mass.
The Sykes Metal Lath & RoofingCo. . . Niles, Ohio
Trus-Con Company . . . Youngstown, Ohio